Landmarks in Civilization and Culture

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SRI RAM MEHRA & CO.
EDUCATIONAL PUBLISHERS, AGRA

PREFACE

Young students in our schools and colleges know next to nothing about the great forces that have contributed to the civilization and culture of man. There are some good histories of civilization, but they are bulky and beyond the comprehension of the young reader.

To give a running account of the civilization of man in a small compass is a well-nigh impossible task, and to give a few detached pieces would be entirely futile. I have, therefore, hit upon the golden mean of selecting the important landmarks of civilization and culture which may give a continuous account of the salient features of man's culture and civilization without making the book unmanageable for the young student. The selections have been made from the best writers on the subject—H. G. Wells, Toynbee, Will Durant, Jawaharlal Nehru and others.

The first chapter gives an account of the earliest ancestors of man. This is followed by an account of the earliest civilizations—Egypt, Mesopotamia, China, etc. We then turn to the glorious civilization of Greece.

Three great spiritual leaders of mankind, viz., Gautam the Buddha, Jesus the Christ and Mohammed have influenced the thought and life of millions of men. Gautam the Buddha influenced the culture of the major part of Asia, Mohammed very largely influenced the civilization and culture of the Semitic people, and Christ's gospel influenced the humanity of the West. Any account of civilization would be incomplete without giving the life and message of these leaders. And so a

brief description of the life and gospel of these personalities has been given after the chapter on Greek civilization.

Then comes the description of Renaissance that influenced tremendously the culture of the West during the Middle Ages. This is followed by an account of the Industrial Revolution that brought about a complete change in the economic life of the world. After this is given an interesting account of democracy which is shaping the political life of practically the entire world.

We then turn towards the wonders of modern Science which is playing the most influential part in the civilization and culture of man today.

The book closes with a chapter from Prof. Toynbee's 'Civilization on Trial' in which the great historian calls our attention to the present point in the history of civilization, and tells us that civilization can be saved only if spiritual values take the lead in our life.

If this book stimulates young readers to take greater interest in the story of man's civilization and turn to bigger books on the subject, I shall consider my labours amply rewarded.

ACKNOWLEDGMENTS

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The University Press, Cambridge for *The Industrial Revolution* from 'A History of England' by C. E. Carrington and J. Hampden Jackson;

The Prime Minister's Secretariat for *The Advance of Democracy* from 'Glimpses of World History' by Jawaharlal Nehru;

Messrs G. Bell & Sons, Ltd. for *The Wonders of Modern Science* from 'March on Civilization' by George Guest;

The Oxford University Press for *The Present Point in History* from 'Civilization on Trial' by Arnold J. Toynbee.

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OUR EARLIEST ANCESTORS

We live under the shadow of a gigantic question mark.

Who are we ?

Where do we come from ?

Whither are we bound ?

Slowly, but with persistent courage, we have been pushing this question mark further and further towards that distant line, beyond the horizon, where we hope to find our answer.

We have not gone very far.

We still know very little but we have reached the point where (with a fair degree of accuracy) we can guess at many things.

In this chapter I shall tell you how (according to our best belief) the stage was set for the first appearance of man.

Man was the last to come but the first to use his brain for the purpose of conquering the forces of nature. That is the reason why we are going to study him, rather than cats or dogs or horses or any of the other animals, who, all in their own way, have a very interesting historical development behind them.

In the beginning, the planet upon which we

attacks of wild beasts, the mammals kept their young with them for a long time and sheltered them while they were still too weak to fight their enemies. In this way the young mammals were given a much better chance to survive, because they learned many things from their mothers, as you will know if you have ever watched a cat teaching her kitten to take care of themselves and how to wash their faces and how to catch mice.

But of these mammals I need not tell you much for you know them well. They surround you on all sides. They are your daily companions in the streets and in your home, and you can see your less familiar cousins behind the bars of the zoological garden.

And now we come to the parting of the ways when man suddenly leaves the endless procession of dumbly living and dying creatures and begins to use his reasons to shape the destiny of his race.

One mammal in particular seemed to surpass all others in its ability to find food and shelter. It had learned to use its fore-feet for the purpose of holding its prey, and by dint of practice it had developed a hand-like claw. After innumerable attempts it had learned how to balance the whole of the body upon the hind legs.

This creature, half ape and half monkey but superior to both, became the most successful

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In the beginning, the planet upon which we

live was, (as far as we now know) a large ball of flaming matter, a tiny cloud of smoke in the endless ocean of space. Gradually, in the course of millions of years, the surface burned itself out, and was covered with a thin layer of rocks. Upon these lifeless rocks the rain descended in endless torrents, wearing out the hard granite and carrying the dust to the valleys that lay hidden between the high cliffs of the steaming earth.

Finally the hour came when the sun broke through the clouds and saw how this little planet was covered with a few small puddles which were to develop into the mighty oceans of the eastern and western hemispheres.

Then one day the great wonder happened. What had been dead, gave birth to life.

The first living cell floated upon the waters of the sea. For millions of years it drifted aimlessly with the currents. But during all that time it was developing certain habits that it might survive more easily upon the inhospitable earth. Some of these cells were happiest in the dark depths of the lakes and the pools. They took root in the slimy sediments which had been carried down from the tops of the hills and they became plants. Others preferred to move about and they grew strange joined legs, like scorpions, and began to crawl along the bottom of the sea amidst the

plants and the pale green things that looked like jelly-fishes. Still others (covered with scales) depended upon a swimming motion to go from place to place in their search for food, and gradually they populated the ocean with myriads of fishes.

Meanwhile the plants had increased in number and they had to search for new dwelling places. There was no more room for them at the bottom of the sea. Reluctantly they left the water and made a new home in the marshes and on the mud-banks that lay at the foot of the mountains. Twice a day the tides of the ocean covered them with their brine. For the rest of the time, the plants made the best of their uncomfortable situation and tried to survive in the thin air which surrounded the surface of the planet. After centuries of training, they learned how to live as comfortably in the air as they had done in the water. They increased in size and became shrubs and trees and at last they learned how to grow lovely flowers which attracted the attention of the busy big bumblebees and the birds who carried the seeds far and wide until the whole earth had become covered with green pastures, or lay dark under the shadow of the big trees.

But some of the fishes too had begun to

attacks of wild beasts, the mammals kept their young with them for a long time and sheltered them while they were still too weak to fight their enemies. In this way the young mammals were given a much better chance to survive, because they learned many things from their mothers, as you will know if you have ever watched a cat teaching her kitten to take care of themselves and how to wash their faces and how to catch mice.

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This creature, half ape and half monkey but superior to both, became the most successful

hunter and could make a living in every clime. For greater safety, it usually moved about in groups. It learned how to make strange grunts to warn its young of approaching danger and after many hundreds of thousands of years it began to use these throaty noises for the purpose of talking.

This creature, though you may hardly believe it, was your first "man-like" ancestor.

We know very little about the first "true" men. We have never seen their pictures. In the deepest layer of clay of an ancient soil we have sometimes found pieces of their bones. These lay buried amidst the broken skeletons of other animals that have long since disappeared from the face of the earth. Anthropologists (learned scientists who devote their lives to the study of man as a member of the animal kingdom) have taken these bones and they have been able to reconstruct our earliest ancestors with a fair degree of accuracy.

The great-great-grandfather of the human race was a very ugly and unattractive mammal. He was quite small, much smaller than the people of today. The heat of the sun and the biting wind of the cold winter had coloured his skin a dark brown. His head and most of his body, his arms and legs too, were covered with long, coarse hair. He had very thin but strong fingers which made his hands look like those of a monkey. His

forehead was low and his jaw was like the jaw of a wild animal which uses its teeth both as fork and knife. He wore no clothes. He had seen no fire except the flames of the rumbling volcanoes which filled the earth with their smoke and their lava.

He lived in the damp blackness of vast forests, as the pygmies of Africa do to this very day. When he felt the pangs of hunger he ate raw leaves and the roots of plants or he took the eggs away from an angry bird and fed them to his own young. Once in a while, after a long and patient chase, he would catch a sparrow or a small wild dog or perhaps a rabbit. These he would eat raw for he had never discovered that food tasted better when it was cooked. During the hours of day, this primitive human being prowled about looking for things to eat.

When night descended upon the earth, he hid his wife and his children in a hollow tree or behind some heavy boulders, for he was surrounded on all sides by ferocious animals and when it was dark these animals began to prowl about, looking for something to eat for their mates and their own young, and they liked the taste of human beings. It was a world where you must either eat or be eaten, and life was very unhappy because it was full of fear and misery.

In summer, man was exposed to the scorching rays of the sun, and during the winter his children would freeze to death in his arms. When such a creature hurt itself, (and hunting animals are for ever breaking their bones or spraining their ankles) he had no one to take care of him and he must die a horrible death.

Like many of the animals who fill the zoo with their strange noises, early man liked to jabber. That is to say, he endlessly repeated the same unintelligible gibberish because it pleased him to hear the sound of his voice. In due time he learned that he could use this guttural noise to warn his fellow beings whenever danger threatened and he gave certain little shrieks which came to mean "there is a tiger !" or "here come five elephants". Then the others grunted something back at him and their growl meant, "I see them," or "let us run away and hide". And this was probably the origin of all language.

But, as I have said before, of these beginnings we know so very little. Early man had no tools and he built himself no houses. He lived and died and left no trace of his existence except a few collar-bones and a few pieces of his skull. These tell us that many thousands of years ago the world was inhabited by certain mammals

who were quite different from all the other animals—who had probably developed from another unknown ape-like animal which had learned to walk on its hind legs and use its fore-paws as hands—and who were most probably connected with the creatures who happen to be our own immediate ancestors.

It is little enough we know and the rest is darkness.

Early man did not know what time meant. He kept no records of birthdays or wedding anniversaries or the hour of death. He had no idea of days or weeks or even year. But in a general way he kept track of the seasons for he had noticed that the cold winter was invariably followed by the mild spring—that spring grew into the hot summer when fruits ripened and the wild ears of corn were ready to be eaten and that summer ended when sudden gusts of wind swept the leaves from the trees and a number of animals were getting ready for the long hibernal sleep.

But now, something unusual and rather frightening had happened. Something was the matter with the weather. The warm days of summer had come very late. The fruits had not ripened. The tops of the mountains which used to be covered with grass now lay deeply hidden underneath a heavy burden of snow.

Then, one morning, a number of wild people, different from the other creatures who lived in that neighbourhood, came wandering down from the region of the high peaks. They looked lean and appeared to be starving. They uttered sounds which no one could understand. They seemed to say that they were hungry. There was not food enough for both the old inhabitants and the new-comers. When they tried to stay more than a few days there was a terrible battle with claw-like hands and feet and whole families were killed. The others fled back to their mountain slopes and died in the next blizzard.

But the people in the forest were greatly frightened. All the time the days grew shorter and the nights grew colder than they ought to have been.

Finally, in a gap between two high hills, there appeared a tiny speck of greenish ice. Rapidly it increased in size. A gigantic glacier came sliding downhill. Huge stones were being pushed into the valley. With the noise of a dozen thunderstorms torrents of ice and mud and blocks of granite suddenly tumbled among the people of the forest and killed them while they slept. Century old trees were crushed into kindling wood. And then it began to snow.

It snowed for months and months. All the plants died and the animals fled in search of the southern sun. Man hoisted his young upon his back and followed them. But he could not travel as fast as the wilder creatures and he was forced to choose between quick thinking or quick dying. He seems to have preferred the former for he had managed to survive the terrible glacial periods which upon four different occasions threatened to kill every human being on the face of the earth.

In the first place it was necessary that man clothe himself lest he freeze to death. He learned how to dig holes and cover them with branches and leaves and in these traps he caught bears and hyenas, which he then killed with heavy stones and whose skins he used as coats for himself and his family.

Next came the housing problem. This was simple. Many animals were in the habit of sleeping in dark caves. Man now followed their example, drove the animals out of their warm homes and claimed them for his own.

Even so, the climate was too severe for most people and the old and young died at a terrible rate. Then a genius bethought himself of the use of fire. Once, while out hunting, he had been caught in a forest-fire. He remembered that he had been almost roasted to death by the flames.

Thus far fire had been an enemy. Now it became a friend. A dead tree was dragged into the cave and lighted by means of smouldering branches from a burning wood. This turned the cave into a cozy little room.

And then one evening a dead chicken fell into the fire. It was not rescued until it had been well roasted. Man discovered that meat tasted better when cooked and he then and there discarded one of the old habits which he had shared with the other animals and began to prepare his food.

In this way thousands of years passed. Only the people with the cleverest brains survived. They had to struggle day and night against cold and hunger. They were forced to invent tools. They learned how to sharpen stones into axes and how to make hammers. They were obliged to put up large stores of food for the endless days of the winter and they found that clay could be made into bowls and jars and hardened in the rays of the sun. And so the glacial period, which had threatened to destroy the human race, became its greatest teacher because it forced man to use his brain.

—Adapted

THE FIRST CIVILIZATION IN THE OLD WORLD

(3500 B. C.—2000 B. C.)

(i) THE FIRST FIVE CENTRES OF CIVILIZATION

The Four River-Valleys

Four great river valleys became cradles of civilization—the Nile, Tigris-Euphrates, Indus and Hwangho. There were naturally differences between the civilizations of each of these valleys, but their essential problems and achievements were similar.

Once the fundamental problem of taming the river-valleys had been solved, the next general problem common to all was that river-valleys are essentially *economic units.* All men living in the valley were interdependent; irrigation forced men to co-operate in larger and more elaborate communities than ever before. The initial clearing had entailed work beyond the reach of single families or even villages; and once irrigation began to be practised co-operation became even more imperative. Men now depended upon a single source of life, upon a river

that had to be banked for miles, whose waters had to be lifted by buckets and pulleys into an intricate system of channels. As always, the need provided also the means for achieving it. Society could now coerce a recalcitrant member by cutting off his water, without which he would die; and he could no longer just move to another plot. Defence of the community, another social undertaking, had also to be organised against the danger of raids by desert-tribes, driven by hunger.

As population and towns increased, this interdependence of the whole community became ever more marked; and, if society were to survive, men had to face up to its consequences. The chief consequence was that social organisation on a scale undreamt of before had to be successfully carried through, for the four river-valleys, though single economic units, were of a vast size. The solution of this problem of *large-scale* organisation created the political, economic and social conditions for civilization. Far more is known about Egypt and Mesopotamia than about the other two valley civilizations.

Egypt

Egypt is a real and complete economic unit;

it consists of a narrow strip along a single river. The need to control irrigation, to keep peace along the whole valley, to organise defence and large-scale trade, here became early very pressing, and owing to the real interdependence of all parts of the river, a *single* power with authority over the whole area was necessary and natural. A struggle for this power arose between the different clans of the Nile, until in 3250 B.C. the falcon-clan from the south asserted its power and conquered the Delta, where till then the chief advances (in writing, metal-working, etc.) had been made. Menes became the first Pharaoh of all Egypt. He established the Old Kingdom, the first Egyptian civilization, which lasted from 3250—2000 B.C. Menes showed that his victory was not a transient display of force but the outcome of a real and permanent Egyptian need. He established the nilometer to measure the flood and help to control and foretell it; he built irrigation canals; he undertook defence, establishing posts against the Libyans from the West, the Beduin from the East, and Nubians from higher up the Nile. He organised state trading expeditions. Cedar was imported from Northern Syria, gold from Nubia. Ships plied constantly to Byblos, the trade centre of the Eastern Mediterranean, and a colony of Egyptian

merchants was established there. Copper and turquoise were brought from Sinai, but there were only wild tribes there, who would not trade; so regular military expeditions were despatched and Egyptian workers were exported to exploit the mines. All these were state enterprises which could only be fully carried on under a single head.

Mesopotamia

Unlike Egypt, Mesopotamia had some rain, though not very much; she had two great rivers, the Tigris and the Euphrates, instead of one; and many small and temporary torrents descended from the mountains, spreading a quick vegetation. Moreover, Mesopotamia was even more barren of raw materials, and therefore dependent on trade, than Egypt. The result was that independent trading city-states arose, and that there never was the same urgency as in Egypt to have a single centralised power. Mesopotamia had a far more warlike and disturbed history than Egypt. Advantages came in Mesopotamia, as in Egypt, from centralised trade and foreign conquests, but in Mesopotamia the central power never had a firm natural and permanent basis. The first Mesopotamian civilization was in Sumeria in Southern Babylon. Here in 3000

B. C., some time after Egypt had been unified, there were some fifteen to twenty towns, each with its temple. In 2750 B.C., in response to the need to organise the imports wanted by the whole region, Sargon of Akkad (Northern Babylonia) unified the whole of Babylonia, including Sumeria. Sargon conquered the whole region from the Caspian to the Persian Gulf. He drew metals from as far away as the Taurus Mountains. But his dynasty lasted only a century; thereafter many other towns attempted to rule the whole area, and it was not till 2000 B. C. (over 1000 years after Egypt) that Babylonia was effectively centralised.

The differences between two river-valleys explain the curious fact that so important a discovery as the wheel could be made in Mesopotamia and not translated to Egypt for 1000 years, though the two civilizations were in close touch. Mesopotamia had more trade than Egypt, but she did not possess a single main artery. Instead, she had two separate rivers and many scattered towns. Therefore land transport was much more important for her than for Egypt. Egypt, moreover, soon after the Mesopotamian discovery of the wheel, enjoyed the long peace of the Old Kingdom, and the natural conservatism of the old magic-bound civilizations had

full play. Egypt could more easily, though after considerable delay, adopt the wheel for pottery, for this did not involve any radical social alterations; the craft of pottery was already known and practised. But the wheel for transport would have involved very radical adaptations. When the wheel was finally adopted it was during a period of war and confusion, and because of its new military importance.

The Indus Valley

The origins of civilization in the Indus Valley are unknown; but they must have been similar to those elsewhere. Peoples of the New Stone Age, knowing something of cultivation and domestication, must have faced the test of further desiccation by irrigation and town life. There seems to have been very early contact between the Indus and Sumeria; and some of the earliest Indus pottery is similar to Sumerian. The Indus Valley civilization, like that of Mesopotamia, was one of large and fairly independent cities. Chief of these cities were Harappa, Mohenjo-daro and Chanhu-daro. By 3000 B. C. wheat and cotton were in cultivation; humped oxen were being used as draught animals, and hens seem to have been first domesticated in this valley.

Copper was worked (probably introduced from the West), and there were wheeled carts and wheel-pottery (both of which were known earlier than in Egypt). Town-building reached great efficiency; Mohenjo-daro was two miles square, with regular main and side streets; two-storey brick houses were constructed. Here, and in other towns, bathrooms were common, with a runaway drain passing out under a latrine into the main sewers, which were built of brick under the streets. Drainage reached a higher development here than in any other of the first civilizations, and a much higher point than is common in the East today.

The Hwangho Valley

The first Chinese civilization was, as we have seen, rather later than the others. There may have been some contact with the West, as here, too, early pottery is similar to Sumerian. Chinese civilization may be said to have started soon after 2000 B. C.; and it, too, consisted of powerful towns, together with a numerous nobility that was imperfectly controlled from the centre. Rice was brought under cultivation, and various other plants unknown to the West, such as the radish. Most domestic animals seem to have been lacking; though China made the original

contribution of the domestic cat (one of the tame animals that has had practically no economic use). China first knew unity under the Shang dynasty (1750 B. C.—1125 B. C.); though there was still no strong centralisation comparable to the Egyptian.

The Civilization of Minos

The civilization of Minos is an interesting example of early civilization; like the other four, it came into existence independently, without any other civilization preparing the way for it; but unlike them it did not grow up along a river-valley and did not depend upon irrigation.

The people who made the Minoan civilization came from the grasslands of Northern Africa; they were therefore people of the same stock that made the Nile and Mesopotamian civilizations. Under the pressure of desiccation, they moved round the east end of the Mediterranean into Asia Minor and finally took to the Aegean Sea in an attempt to escape from the climatic changes. Their main settlement was in Minos (Crete). In this and neighbouring islands they built up a civilization that was not based upon irrigation.

The Minoans had the same New Stone Age knowledge as the founders of the other first civili-

zations; they were also similar in that they had a testing challenge to meet. This challenge was the sea, and the need to tame it by building and maintaining ships, which involves sustained social effort. Moreover, before the Minoan civilization could proceed very far, it found it necessary to eke out the production of the islands by concerted trade with other centres of civilization. For this purpose the islands were well-placed, within reach of both Mesopotamia and Egypt. The Minoans also shared one great advantage with the founders of the other first civilizations, namely, that the conditions which challenged them at the same time provided protection against marauders from outside.

Minoan civilization was later than those of Egypt and Mesopotamia. It had to wait till men had mastered the sea in ships; its founders had also postponed meeting the challenge of desiccation by moving for some time in front of it. The Minoans may have been helped by early contact with Egypt; there is evidence of Egyptian trade with Minos as early as 3500 B.C. This contact cannot alone explain the origin of Minoan civilization, which must have been primarily due to the independent effort of the Minoans; not in every place in which Egypt traded did a new civilization spring up. But it was

perhaps through this trade that Minos kept in touch with the discovery of metals, which was of basic importance in all the first civilizations. Minos was soon working copper, and building great towns and temples. She also built up a large export trade in olive-oil and slaves. Minoan civilization can be dated from about 2500 B.C.; it reached its height between 2000 and 1000 B. C., about 1000 years after the first peak of Egyptian and Mesopotamian civilizations.

(ii) CONSEQUENCES OF POLITICAL UNITY AND TOWN-LIFE

The chief material invention of the first civilizations was the alloy of copper and tin, called bronze, which was superior to pure copper. This discovery was partly due to the need for improved tools, partly to the increasingly steady and voluminous trade that developed in this age. Copper and tin ores often exist together and a copper-using civilization would be bound to stumble upon natural bronze by accident. But a steady demand and the handling of large quantities were necessary before analysis and deliberate production would be undertaken. It was necessary to bring together the two metals, often from far apart, to discover the exact pro-

organised agricultural people, to tell them when to sow and plough and reap; it is doubly necessary where agriculture depends upon irrigation, for it is vital to know when the flood is coming. Egypt produced the best early calender, for Egypt depended completely and exclusively upon the Nile flood, which moreover arrived regularly each year almost to a day. Probably in 2776 B. C., Egypt officially adopted a sun-calendar, which was far more accurate than the previous lunar-calendar. This calendar depended upon a most accurate study of the movement of the sun and stars, and length of the year was only six hours out. The Egyptian calendar has been the basis of all subsequent Western calendars. It had a year of 365 days and the day was divided into 24 hours. The hours in this sunny climate were measured in the day-time by the movement of the shadows of obelisks (like Cleopatra's needle) and at night by water-clocks. The arrangement of business and the planning of large works depended upon an accurate count of hours. Babylonia, which depended less than did Egypt upon irrigation, stuck to a lunar-calendar, though the solar calendar was known and was used to check the official Babylonian calendar from time to time.

Mathematics

Early civilization rested upon an elaborate science of measurements and numbers, just as modern civilization rests upon accuracy of science. Very great advances were made from the primitive use of numbers to count sheep or grain or days, or to measure simple lengths by the size of the workman's arm or hand. As writing had to become a social possession, so had measures to be socialised; standard lengths and weights and measures, that would be the same for workmen everywhere, had gradually to be adopted. (Identical weights have been found in the Indus valley in towns as for as 400 miles apart.) Enormous numbers had to be handled in calculating the calendar, or the number of blocks for a pyramid, or the wages in building a temple, or the provisions for an army. Simplified methods of calculation, for multiplying, dividing, etc., had to be evolved. The calculation of the size of fields for taxation led to the study of area; the calculations of quantity for trade, or for calculating the bricks in a building, or the grains in a granary, led to the study of volume. These advances meant that the ancient mathematicians were no longer dealing with simple concrete numbers that represented things, but with a new sort of numbers that represented

measurements. Not so many sheep, but so many inches or feet; not so many handfuls of corn, but pounds, ounces, etc.

Egypt, for reasons which we shall see, achieved a greater accuracy than Babylonia, but Babylonia made the profoundest mathematical advances. Babylonia had more trade, more military undertakings, more need therefore for calculations. She had, moreover, the advantage of a dead language for her sciences. For with the rise of Babylon, Sumerian was superseded by the Semitic language of the conquerors; but Sumerian remained as the language of literature and of the priesthood, much like Latin in the Middle Ages. This meant that Babylonia could employ abstract symbols, divorced from everyday meaning, and could thus escape much more than Egypt from the literal use of numbers; whereas Egypt always thought of mathematical problems concretely (for instance, how many grains will go into a granary of a certain size, or how high a Pyramid should be in feet). Babylonia could think of numbers abstractly (could, for instance, probe into the problem of the square-roots of numbers, considered merely as numbers and not as representing so many things or such a length). By 2000 B.C., Babylonia had evolved a distinct and scientific

mathematical terminology; whereas Egypt used signs and terms that were in everyday use. Babylonia was thus able to make greater discoveries than Egypt; she could handle fractions, drew up tables of square-roots; and, whereas Egypt stuck to the abacus (a simple adding-machine, like a child's toy of beads on wires), Babylon wrote figures in order much as we do. Babylonia never discovered the figure 0 (it needs very abstract thought to conceive of nothing as an amount that can have a symbol, like 1 or 2); she nevertheless made some approach to the decimal system and could calculate with much greater ease than Egypt.

Advances were also made in astronomy and geometry. The length of the year, the division of the day into hours, the discovery of the points of the compass, all depend upon the place of the world in the universe and its movements in relation to the sun and the stars; the early civilizations were by necessity assiduous watchers of the skies (which are very clear in those latitudes) and laid the foundations of astronomy. Man began to probe and measure the universe in order the better to control the earth on which he lived. Geometry was needed to measure the area of fields for taxation purposes and to establish boundaries in frequently flooded

ground. It was also necessary for making calculations in building houses and canals, for calculating heights, making true right-angles, etc.

All these mental advances were socially necessary; they were state-supported enterprises in the hands of a trained priesthood, that was maintained by the work of the rest of the community.

Religion and Magic

The religious thought of the first civilizations was very complex; there was nothing like a supreme and single state-religion. The sun-cult, as in Egypt, might be dominant; but, alongside it, were many minor cults. Some of these (like the cult of Osiris and the underworld in Egypt) might be the worship of a nobility that expressed its rights against the central government by maintaining an old cult from the days when the nobility had been strong. In the same way, in China many older cults survived after the Emperors of the Shang dynasty (1750 B. C.—1125 B. C.) had begun to express the delayed unity of China by offering sacrifices to heaven on behalf of the whole people. In much the same way as the Pharaoh, the Chinese Emperor became the Son of Heaven.

Many other cults survived from the difficult

days when men were painfully learning cultivation. Amongst all peoples this has been a stage that has produced a rich harvest of magical and religious beliefs, which helped to brace and console the people through a period of great social effort. Thus, in all the first civilizations we find the worship of the Mother-Goddess, who is the central fertility-deity. In Chanhu-daro in the Indus valley many figures of the Mother-Goddess have been found, together with models of doves (which in all these civilizations were the special attendants of this goddess). Another common tendency, dating from the mysteries of domestication, was the worship of all sorts of animals (such as the worship of the crocodile in Egypt).

Besides its direct social uses, magic had many indirect consequences of value. We have seen how it aided the domestication of animals, provided currency, and contributed towards the invention of writing. Another instance was the Egyptian use of malachite as an eye-paint. The Nile in flood was green and it left a green vegetation behind it. Green, therefore, came to be considered as a magical life-giving colour (like red), and malachite, which was green, became a valuable commodity, imported from considerable distances. But malachite as an eye-paint

had valuable medical properties; it was a disinfectant against the flies of the desert and its green colour was an antidote against the damaging glare of the sun. Malachite, moreover, was a copper ore and its very extensive use and import may have contributed towards the use and discovery of copper. An elaborate social etiquette sprang up around the use of malachite and other cosmetics (as around the use of tobacco to-day).

Economic Organisation and Class-Structure

These early civilizations were huge states with an intricate social organisation. In all of them towns began to specialise in special products. For instance the relatively small town of Chanhu-daro in the Indus valley became an important manufacturing centre, distributing copper and bronze tools, stone weights, and even toys to considerable distances. An example of another sort of specialisation was Memphis in Egypt, which became the centre of the priesthood of the Sun-cult.

The chief power in society was in the hands of the priests. They had discovered the secrets of calculation, measurement and time, upon which the whole society depended; they had charge of the cults which kept society together;

they understood the mysteries of the sun. They controlled the Pharaoh and the other rulers, and could keep the nobility and people in subordination. In Egypt the rise of the sun-cult went with the subordination of the nobles, who always clung to the older Osiris-cult and who believed in an underworld, not a sky-world (which was the Pharaoh's prerogative). The sun-priests could not entirely overthrow the worship of Osiris, but they made it inferior to the worship of Ra.

Mesopotamia was more suited than Egypt to great unstable empires, depending upon conquest and the taxation of cities; but even here, through all the conquests, the priesthood preserved the continuity of science and culture. Sumeria and its ancient language remained the cultural centre of Mesopotamia, whichever town or tribe were ruling the country.

Under the priests were nobles, craftsmen, merchants, soldiers, etc. The mass remained cultivators and workers, very largely in huge state enterprises; slaves were imported or conquered; sometimes desert tribes driven by hunger or by more powerful enemies were accepted into a sort of servitude, as were the Jews. Society was thus very complex and stratified; the lower orders seem to have been contented, for the

existing society was the only way of maintaining civilization. Though imperialism and foreign conquest were not yet all-important, they already played some part; some tribes, like those of Sinai, were kept in dependence; and foreign trading-stations were maintained. The class structure was not fixed; there were struggles between rival priesthoods, and the nobles wanted to regain power.

—Adapted

THE GLORY THAT WAS GREECE

The Surprising Greeks

Here is a description of one of the greatest civilizations that the world has seen, the civilization of the Greeks some five hundred years before Christ. This civilization, which lasted for about two hundred years, came to its height in the city of Athens, during the one hundred and fifty years from about 480 to about 330 B. C. The Greeks were remarkable in all sorts of surprising ways.

Most of the peoples that there have been in the world have added nothing to civilization; they have behaved exactly like their fathers and *their* fathers before them, preserved their traditional ways and customs and passed away. And history has nothing to say about them either for good or for ill. But every now and then comes a people which makes a break with the past and starts afresh on its own.

From time to time in the history of the world a small section of the human race has suddenly gone up like a rocket, and, breaking out in a shower of sparks, lit up everybody and everything around it. Of all these soarings of the

human spirit the uprising of the fifth-century (B. C.) Greeks was the most startling. They went up in a perfect blaze of splendour, and Athens was the most splendid rocket of them all. Let us try to imagine for a moment what an Athenian's day was like.

An Athenian's Day

He woke up under a cloudless sky, probably on some terrace overlooking the sea. He breakfasted on a sort of verandah, and then went out as soon as he could to the streets and the market-place, for except to eat and sleep the Athenian is hardly ever at home; his life is passed out-of-doors. The streets and the market-place are full of his friends and acquaintances, and he spends a good deal of his time talking and arguing with them, especially arguing. The streets and the market-place of Athens were, like the clubs of to-day, places where people met for the fun of the thing, to talk about affairs and enjoy one another's company. But, as in the case of most modern clubs, there are no women about, or very few. Where, then, are the women? They are indoors. On the whole, the Greeks thought that men ought to spend their lives outdoors and women indoors, from which you will see that the men did not have much to do with the women.

After greeting his friends in the streets our Athenian may go and do a little work. But work does not mean for him as it does for most of us, sitting about indoors doing the same thing over and over again. He is, let us say, a potter making clay vases, or a mason engaged in putting up one of the splendid public buildings on the Acropolis (the sacred hill of Athens). In his workshop there are two or three apprentices, and, say, half a dozen slaves. Although he is the master and gives the orders, he works with them on equal terms. On the whole, he treats his slaves well and pays them for the work they do as much as he pays free men. Presently they will have saved enough to buy their freedom, if they want it, for Greek slaves are continually becoming freed men either by purchasing their freedom, or by having worked long enough to have earned it. Altogether the workshop is more like the studio of an artist than a modern factory, and our Athenian has the habits of an artist rather than of a modern workman; he works only when he feels inclined, and his working will not interfere with his performance of his various duties as a citizen of the State.

The workshop itself is mostly out of doors in a sort of portico or verandah; the court is flooded with sunlight and the workers sing as they

work. And what happens if it rains? It practically never does rain.

In the afternoon our Athenian will probably go to the assembly and take a turn at doing the State's business. The assembly is the governing body of Athens; all men citizens belong to it and have a right to speak. Moreover, they vote, and by their voting decide what the city shall do, what decisions shall be made about war and peace, what taxes levied, and so on. Usually our Athenian will think having to go to the assembly rather a bore, and so after a time he gets paid money to attend. If he does not go to the assembly, he may put in an appearance at the law courts as a jurymen and decide disputes between his fellow-citizens. And wherever he goes he will meet people he knows to talk to, and, should he meet a stranger to the city in the streets, he will welcome him and ask him his business.

In the evening he will probably go to dine at the house of a friend. There may be half a dozen or a dozen other guests at dinner, which they will take lying on couches, the food and wine being brought round by slaves. Probably there will be no women present, and after dinner, or even while it is still going on, the men will begin to talk. Often they will go on talking all the

evening without leaving the dining-room.

What They Talked About

What did they talk about? Anything and everything, science, philosophy, history, politics, religion, love, foreign lands, where the human race came from, where men go to when they die. There were hundreds of things to talk about, for the Greeks were interested in everything. They were thinking things out for themselves for the first time. For this is the first and perhaps the most important thing that I want to say about the Greek civilization; it was a civilization of men whose minds had at last got free, free to think and to talk as they liked. This, of course, only applies to some Greeks, perhaps only to a few; and the freedom and fearlessness of the few sometimes got them into trouble with the rest. You cannot after all expect everybody to be wonderful at once, even when they *are* Greeks. But the few were the people who mattered. Afraid neither of gods nor of men, they regarded no subjects as sacred and none as wicked, and, being the most inquisitive people on the earth, they talked about and inquired into everything. It is only when I come to tell the story of later civilizations that you will see how unusual were this freedom and fearlessness of mind.

And talking and wondering and finding out, they laid the foundations of all the things that civilized people care for to-day, of science and philosophy and art and politics. Thus the Greeks practically began everything, and that was why they found life so exciting.

The First Doctors and Historians

For example, the first famous doctor was a Greek, Hippocrates (460 to about 370 B. C.), who lived on the island of Cos. Most of the things that Hippocrates found out about the body are now known to be not quite true, but he laid the foundations upon which others built—he and another Greek called Galen (A. D. 130-200), who lived at Rome five hundred years later. But, although we have found out much more than Hippocrates ever knew, doctors still try to observe the rules of medical conduct which he laid down, to help one's patients to the best of one's power, never to use magic or charms, never to supply poison, never to give away secrets, and always to try and help everybody in the house you are visiting.

The Greeks, again, were the first historians, the first people, that is to say, to record the sayings and doings of other men, and to try to make a connected story of what had happened

in the world. Herodotus (484-425 B. C.) travelled into far lands and brought back strange tales, and wrote the history of the wars of the Greeks and the Persians. Thucydides (about 470-400 B. C.), one of the world's most famous writers of history told the story of the great war which the Greeks waged among themselves, the war of the Athenians against the Spartans. Thucydides is remarkable because he was the first man who tried to tell the true story of a quarrel without favouring either side.

The First Scientists and Philosophers

Again, the Greeks began the study of geometry. Probably many of my readers have heard of Euclid (450-374 B. C.); if you haven't yet, you will. You will probably find him rather difficult and come to think of him only as the author of a boring and inky school-book about triangles and right-angles. It is a pity that you should have to think about Euclid like this, because he was a very great man who, with the aid of a little sand let into the floor, discovered the laws of geometry. Euclid wrote a book which survived long after the world which he had known had been swept away, and the Greeks had been conquered by the Romans, and the Romans conquered in their

turn by the barbarians, and the barbarians by the aid of that very book were at long last educated and turned into civilized peoples, among whom we number ourselves.

Euclid is not much studied in schools to-day, but I had to learn him at school, which is, when you come to think of it, a very remarkable thing. For geometry is a sort of science, and in nothing is early knowledge so quickly left behind as it is in science. Yet here was I, twenty years ago, being made to read Euclid who wrote two thousand four hundred years ago.

There was nothing which our Athenian talked so much about at his dinner, nothing which interested him so much as philosophy. Philosophy is a sort of discussion about everything, about the difference between right and wrong, whether there are gods and what they are like, what the world is made of, how it began, how men ought to live together in society, whether they ought to own slaves, whether eating "treacle toffees" is the most important thing in life, and hundreds of other things. The Greeks began this discussion some two thousand four hundred years ago, and it has gone on practically ever since. And they had all sorts of exciting ideas about the subjects they discussed.

There was Socrates, for instance (about 471-

399 B. C.). He used to go into the market-place and ask people inconvenient questions, the sort that children sometimes ask grown-up people, and which always annoy grown-up people when they find that they don't know the answers, although they thought they did. Socrates annoyed the Athenians so much that they accused him of doing harm to young men's minds and had him poisoned. This was one of the worst things the Athenians did.

Then there was Plato (427-347 B. C.). He was a disciple of Socrates and wrote down most of his teaching in what are called Dialogues, which are talks carried on by a number of people who come together and discuss things in general. Socrates usually begins the Dialogues by asking his inconvenient questions, and then, when nobody can answer them, sets to work to try to answer them himself. These Dialogues of Plato are among the most famous and the wisest books in the world, and people who care about knowledge still read them eagerly to-day as they have done in all ages. After Plato came Aristotle (384-322 B. C.). He was one of the most inquisitive men who ever lived, and tried to find out about everything, about the stars, about what things were made of, about how the mind worked, about the different kinds of animals, and about

what one ought to aim at in life.

I cannot even begin to speak of the answers which the Greeks suggested to all the questions they discussed. Indeed in a queer sort of way their greatness lay in the fact that they didn't answer them. Most of the people who came after the Greeks have tried to answer them and have thought that they had succeeded; but their answers have usually been wrong. In spite of this, however, they have insisted that they were right, and have made things very uncomfortable for those who did not answer them in the same way as themselves. The Greeks alone kept open minds, saw that there were all sorts of answers and let people choose their own. On the whole, perhaps, their main general idea, and that about which most of them were agreed, was that one ought to try something of everything, but not have too much of anything. This is called the doctrine of "the mean", and it is a very good doctrine too.

And it must be remembered that, although the Greeks did not settle the things they talked about, they had enlightened ideas about them. Indeed they had the first enlightened ideas in the Western world. Thus we hear them in their discussions condemning slavery, trying to get rid of superstition, claiming for women the same

rights as men, looking forward to the day when all mankind will be one brotherhood and there will be no more divisions and wars. And they are the first Western people (for we must not forget Buddha) ever to suggest that these things are possible.

There are two things about which I ought to say something more before I leave the Greeks; the first is their government and the second their art.

The Idea of Democracy

Most of the governments of the world have been cruel, oppressive and unjust. Their object has been not to do good to the people whom they were governing, but only to benefit those who were governing them. Usually the government has been in the hands of some absolute prince or ruler possessing supreme power, who did precisely what he liked with and to his subjects. In such cases he would be assisted by a few people belonging to highly placed families, who were treated like favourites in a school and helped the ruler to keep the great mass of the people in subjection. Sometimes the families would govern by themselves without any one person as prince or supreme ruler. The Greeks called the first kind of government a tyranny and

the ruler a tyrant, and the second kind an aristocracy or oligarchy and the ruling families aristocrats or oligarchs. Tyrannies and aristocracies had been the rule in the world for centuries before the Greeks, and they were the rule again for centuries after them, which makes it all the more remarkable that some of the Greek cities, notably Athens, invented a new system of government called democracy, which is the kind of government which prevails in most civilized countries to-day.

The idea of a democracy is that the people shall do their governing for themselves. Obviously there must be special persons, called officers, or officials or ministers, to carry out the actual business of the State, discussing things with the representatives of other States, levying taxes and so on; but in a democracy these officers are not self-appointed rulers or ruling families, but are elected by the citizens themselves, who instruct them in a general sort of way what they shall say to foreign States, what taxes they shall levy, and how they shall conduct the State's business.

In Athens, where the total number of men citizens was not more than about forty thousand, it was possible in theory for all the citizens to attend the governing assembly, and to decide

what the city's policy should be. In practice some six or seven thousand would actually turn up. In a modern democracy, where the number of citizens runs into many millions, this direct way of running things is not possible, and so the people decide things indirectly, as it were, by electing men and women to represent them and carry out their wishes.

When you think about it, you can see that a democracy is the only way of running the affairs of society which ensures that in the long run the things most people want get done. It is the only way, in fact, to prevent princes and rulers oppressing the people and running things in their own interests. Hence we owe a great debt to the Greeks for inventing democratic government.

Greek Art: the Greek Playwrights

Art or the making of beautiful things is one of the most important parts of civilization. Beautiful things are chiefly made in stone, in paint laid on canvas and in sound; and sculpture, painting and music are thus the chief arts. They are also written in words; the writing of beautiful things in words is called the art of literature. The writing of plays, a special branch of literature, is called drama. Now the

Greeks were good at all the arts, but especially at drama and sculpture. The Athenian playwrights, Aeschylus (525-456 B. C.), Sophocles (495-406 B. C.) and Euripides (480-406 B. C.) are, next to Shakespeare, perhaps the most famous in the world. Sophocles and Aeschylus wrote plays of great beauty and power, showing that human beings are helpless in the hands of Fate and the gods. Euripides had ideas far in advance of his time; he thought that women should have freer and better lives, that one ought to treat slaves kindly and pity the poor and the unfortunate. Some of Euripides's ideas are rather like those of our famous modern playwright, Bernard Shaw. All three tried to show how easy it is for human beings who have a little success to get above themselves, and boast and swagger and think they are very fine fellows indeed. But if they do so, the dramatists taught, some great misfortune may be expected to happen to them; for the gods don't like human beings to get too puffed up, and are only too anxious to take them down a peg. The moral is that when things go well with us we ought to be careful not to take too much credit for it. Admittedly it is hard to be humble when you are doing well, and not to boast; but this is just the time when we ought to be most on our guard against off-

ending the gods.

There was also a great comic writer, Aristophanes, who made jokes about public men and affairs.

The different playwrights competed each year for a prize which was given to the author of the best play of the year, and audience themselves were the judges. The Athenians, who loved plays, would sit for hour after hour in their out-of-door theatre listening to the different plays sent in for the competition, and judging between them. The winner of the competition was the most honoured man in Athens.

Greek Artists

It is not easy to speak about the Greek architects and sculptors, or to praise the temples they built and the statues they made. The difficulty is to say why it is that people have made such a fuss of them. But the plain fact of the matter is this : many peoples have produced work of art and they have been generally forgotten, so that to-day nobody thinks twice about them. The Greeks alone, or almost alone, wrote books and built buildings and made statues which, instead of being forgotten in the lifetime of the men who made them, lasted on and are to-day preserved among the most valuable things in the

world. Nobody can say quite why this is, for the buildings are not very grand, nor are the statues highly ornamented or decked out with precious stones and jewels. Indeed they are very simple, and at first sight look very ordinary. You see a statue, say, of a young man racing or throwing a ball, or an old man thinking, and that is all. But these simple Greek things are more beautiful than all the gorgeous patterns and stuffs and jewels in the art of many other countries.

—Adapted

THE LIFE AND GOSPEL OF THE BUDDHA

Life

It is interesting to turn from the mental and moral activities of Athens and Alexandria, and the growth of human ideas in the Mediterranean world, to the almost entirely separate intellectual life of India. Here was a civilization which from the first seems to have grown up upon its own roots and with a character of its own. It was cut off from the civilizations to the west and to the east by vast mountain barriers and desert regions. The Aryan tribes who had come down into the peninsula soon lost touch with their kindred to the west and north, and developed upon lines of their own. This was more particularly the case with those who had passed on into the Ganges country and beyond. They found a civilization already scattered over India, the Dravidian civilization. This had arisen independently, just as the Sumerian, Cretan, and Egyptian civilizations seem to have arisen, out of the wide-spread development of the Neolithic culture. They revived and changed this Dravidian civilization.

These Indian Aryans were living under differ-

ent conditions from those that prevailed to the northwest. They were living in a warmer climate; they were forced, therefore, to a generally vegetarian dietary, and prolific soil, almost unasked, gave them all the food they needed. There was no further reason for them to wander; the crops and seasons were trustworthy. They wanted little clothing or housing. There was still land for every one who desired to cultivate a patch—and a little patch sufficed. Their political life was simple and comparatively secure; no great conquering powers had arisen as yet in India, and her natural barriers sufficed to stop the early imperialisms to the west of her and to the east. Thousands of comparatively pacific little village republics and chieftainships were spread over the land. There was no sea life, there were no pirate raiders, no strange traders. One might write a history of India coming down to four hundred years ago and hardly mention the sea.

The history of India for many centuries had been happier, less fierce, and more dreamlike than any other history. Yet there was much active thought among the Orientalized Aryans; great epics were composed and handed down by verbal tradition. There was also much profound philosophical speculation, which has still to be brought into clear relations with the philosophi-

cal systems of the west.

It was somewhere between 600 and 500 B. C., that the founder of Buddhism was born in India. He was born in a small republican tribal community in the north in what is now overgrown jungle country on the borders of Nepal. The little state was ruled by a family, the Sakya clan, of which this man, Siddhartha Gautama, was a member. Siddharatha was his personal name, Gautama, or Gotama, his family name, Sakya his clan name. The institution of caste was not yet fully established in India, and the Brahmins, though they were privileged and influential, had not yet struggled to the head of the system; but there were already strongly marked class distinctions and practically a partition between the noble Aryans and the darker common people. Gautama belonged to the former race.

It is only within the last half century that the increasing study of the Pali language, in which most of the original sources were written, has given the world a real knowledge of the life and actual thought of Gautama. Previously his story was overlaid by accumulations of legend, and his teaching misconceived. But now we have a very human and understandable account of him.

He was a good-looking, capable young man of fortune, and until he was twenty-nine he lived the ordinary aristocratic life of his time. All the good that life seemed to offer, Gautama enjoyed. He was married at nineteen to a beautiful cousin. For some years they remained childless. He hunted and played and went about in his sunny world of gardens and groves and irrigated rice-fields. And it was amidst this life that a great discontent fell upon him. It was the unhappiness of a fine brain that seeks employment. He lived amidst plenty and beauty, he passed from gratification to gratification, and his soul was not satisfied. It was as if he heard the destinies of the race calling to him. He felt that the existence he was leading was not the reality of life, but a holiday—a holiday that had gone on too long.

While he was in this mood he saw four things that served to point his thoughts. He was driving on some excursion of pleasure, when he came upon a man dreadfully broken down by age. The poor, bent, enfeebled creature struck his imagination. "Such is the way of life," said Channa, his charioteer, and "to that we must all come". While this was yet in his mind he chanced upon a man suffering horribly from some loathsome disease. "Such is the way of life," said Channa. The

third vision was of an unburied body, swollen, eyeless, mauled by passing birds and beasts and altogether terrible. "That is the way of life," said Channa.

The sense of disease and mortality, the insecurity and the unsatisfactoriness of all happiness, descended upon the mind of Gautama. And then he saw one of those wandering ascetics who already existed in great numbers in India. These men lived under severe rules, spending much time in meditation and in religious discussion. For many men before Gautama in that land of uneventful sunshine had found life distressing and mysterious. These ascetics were all supposed to be seeking some deeper reality in life, and a passionate desire to do likewise took possession of Gautama.

He was meditating upon this project, when the news was brought to him that his wife had been delivered of his first-born son. "This is another tie to break," said Gautama.

He returned to the village amidst the rejoicings of his fellow clansmen. There was a great feast and a dance to celebrate the birth of this new tie, and in the night Gautama awoke in a great agony of spirit, "like a man who is told that his house is on fire." In the ante-room the dancing girls were lying in strips of darkness and

moonlight. He called Channa, and told him to prepare his horse. Then he went softly to the threshold of his wife's chamber, and saw her by the light of a little oil lamp, sleeping sweetly, surrounded by flowers, with his infant son in her arm. He felt a great craving to take up the child in one first and last embrace before he departed, but the fear of waking his wife prevented him, and at last he turned away and went out into the bright Indian moonshine to Channa waiting with the horses, and mounted and rode off into the world.

Very far they rode that night, and in the morning he stopped outside the lands of his clan, and dismounted beside a sandy river. There he cut off his flowing locks with his sword, removed all his ornaments, and sent them and his horse and sword back to his house by Channa. Then going on, he presently met a ragged man and exchanged clothes with him, and so having divested himself of all worldly entanglements; he was free to pursue his search after wisdom. He made his way southward to a resort of hermits and teachers in a hilly spur running into Bengal northward from the Vindhya Mountains, close to the town of Rajgir. There a number of wise men lived in caves, going into the town for their simple supplies and imparting their knowledge

by word of mouth to such as cared to come to them.

Gautama became versed in all the metaphysics of his age. But his acute intelligence was dissatisfied with the solutions offered him.

The Indian mind has always been disposed to believe that power and knowledge may be obtained by extreme asceticism, by fasting, sleeplessness, and self-torment, and these ideas Gautama now put to the test. He betook himself with five disciple companions to the jungle and there he gave himself up to fasting and terrible penances. His fame spread but it brought him no sense of truth achieved. One day he was walking up and down, trying to think in spite of his enfeebled state. Suddenly he staggered and fell unconscious. When he recovered, the absurdity of these semimagic ways of attempting wisdom was plain to him.

He amazed and horrified his five companions by demanding ordinary food and refusing to continue his self-mortifications. He had realized that whatever truth a man may reach is reached best by a nourished brain in a healthy body. Such a conception was absolutely foreign to the ideas of the land and age. His disciples deserted him, and went off in a melancholy state to Banaras.

For a time Gautama wandered alone, the loneliest figure in history, battling for light.

When the mind grapples with a great and intricate problem, it makes its advances, it secures its positions step by step, with but little realization of the gains it has made, until suddenly, with an effect of abrupt illumination, it realizes its victory. So, it would seem, it happened to Gautama. He had seated himself under a great tree by the side of a river, to eat, when this sense of clear vision came to him. It seemed to him that he saw life plain. He is said to have sat all day and all night in profound thought, and then he rose up to impart his vision to the world.

Extraordinary attention has been given to the tree under which Gautama had this sense of mental clarity. It was a tree of the fig genus, and from the first it was treated with peculiar veneration. It was called the Bo Tree. It has long since perished, but close at hand lives another great tree which may be its descendant, and in Ceylon there grows to this day a tree, the oldest historical tree in the world, which we know certainly to have been planted as a cutting from the Bo Tree in the year 245 B. C. From that time to this it has been carefully tended and watered; its great branches are supported by

pillars, and earth has been terraced up about it so that it has been able to put out fresh roots continually. It helps us to realize the shortness of all human history to see so many generations spanned by the endurance of one single tree.

At Banaras Gautama sought out his five pupils, who were still leading the ascetic life. There is an account of their hesitation to receive him when they saw him approaching. He was a backslider. But there was some power of personality in him that prevailed over their coldness, and he made them listen to his new convictions. For five days the discussion was carried on. When he had at last convinced them that he was now enlightened, they hailed him as the Buddha. There was already in those days a belief in India that at long intervals Wisdom returned to the earth and was revealed to mankind through a chosen person known as the Buddha. According to Indian belief there have been many such Buddhas; Gautama Buddha is only the latest one of a series.

He and his recovered disciples then formed a sort of Academy in the Deer Park at Banaras. They made for themselves huts, and accumulated other followers to the number of three score or more. In the rainy season they remained in discourse at this settlement, and during the dry

weather they dispersed about the country, each giving his version of the new teachings. All their teaching was done, it would seem, by word of mouth.

The Gospel of Gautama Buddha

The fundamental teaching of Gautama is clear and simple and in the closest harmony with modern ideas. It is beyond all dispute the achievement of one of the most penetrating intelligences the world has ever known.

We have what are almost certainly the authentic heads of his discourse to the five desciples which embodies his essential doctrine. All the miseries and discontents of life he traces to insatiable selfishness. Suffering, he teaches, is due to the craving individuality, to the torment of greedy desire. Until a man has overcome every sort of personal craving his life is trouble and his end sorrow. There are three principal forms the craving of life takes, and all are evil. The first is the desire to gratify the senses, sensuousness. The second is the desire for personal immortality. The third is the desire for prosperity, worldliness. All these must be overcome —that is to say, a man must no longer be living for himself—before life can become serene. But when they are indeed overcome and no longer

rule a man's life, when the first-personal pronoun has vanished from his private thought, then he has reached the higher wisdom, Nirvana, serenity of soul. For Nirvana does not mean, as many people wrongly believe, extinction, but the extinction of the futile personal aims that necessarily make life base or pitiful or dreadful.

Now here, surely, we have the completest analysis of the problem of the soul's peace. Every religion that is worth the name, every philosophy, warns us to lose ourselves in something greater than ourselves. "Whosoever would save his life, shall lose it": there is exactly the same lesson.

The teaching of history is strictly in accordance with this teaching of Buddha. There is no social order, no security, no peace or happiness, no righteous leadership or kingship, unless men lose themselves in something greater than themselves. The study of biological progress again reveals exactly the same process—the merger of the narrow globe of the individual experience in a wider being. To forget oneself in greater interests is to escape from a prison.

The self-denial must be complete. From the point of view of Gautama that dread of death, that greed for an endless continuation of his mean little individual life was as mortal and ugly and evil a thing as lust or avarice or hate.

Let us briefly recapitulate the eight elements of the Aryan Path. First, Right Views; Gautama placed the stern examination of views and ideas, the insistence upon *truth*, as the first research of his followers. There was to be no clinging to superstitions. Next to Right Views came Right Aspirations: because nature abhors a vacuum, and since base cravings are to be expelled, other desires must be encouraged—love for the service of others, desire to do and secure justice, and the like. Devotion to science and art, or to the betterment of things, manifestly falls into harmony with the Buddhistic Right Aspirations, provided such aims are free from jealousy or the craving for fame. Right Speech, Right Conduct, and Right Livelihood need no expansion here. Sixthly in this list came Right Effort, for Gautama had no toleration for good intentions and slovenly application; the disciple had to keep a keenly critical eye upon his activities. The seventh element of the path, Right Mindfulness, is the constant guard against a lapse into personal feeling or glory for whatever is done or not done. And, finally, comes Right Rapture, which seems to be aimed against the pointless ecstasies of the devout.

—Adapted

The Growth of Jesus

Both Matthew and Luke assign Jesus' birth to "the days when Herod was king of Judea"—consequently before 3 B. C. Luke, however, describes Jesus as "about thirty years old" when John baptized him "in the fifteenth year of Tiberius"—i. e., A. D. 28-29; this would place Christ's birth in the year 2-1 B. C. We have no knowledge of the specific day of his birth. Clement of Alexandria (ca. 200) reports diverse opinions on the subject in his day, some chronologists dating the birth April 19, some May 20; he himself assigned it to November 17, 3 B. C. As far back as the second century the Eastern Christians celebrated the Nativity on January 6. In 354 some Western churches, including those of Rome, commemorated the birth of Christ on December 25; this was then erroneously calculated as the winter solstice, on which the days begin to lengthen.

Matthew and Luke place the birth of Christ in Bethlehem, five miles south of Jerusalem; thence, they tell us, the family moved to Nazareth in Galilee. Mark makes no mention of

Bethlehem, but merely names Christ "Jesus of Nazareth". His parents gave him the quite common name Yeshu'a (our Joshua), meaning "the help of Yahveh".

Next to her son, Mary is the most touching figure in the narrative: rearing him through all the painful joys of motherhood, proud of his youthful learning, wondering later at his doctrine and his claims, wishing to withdraw him from the exciting throng of his followers and bring him back to the healing quiet of his home ("thy father and I have sought thee sorrowing"), helplessly witnessing his crucifixion, and receiving his body into her arms; if this is not history it is supreme literature, for the relations of parents and children hold deeper dramas than those of sexual love.

The evangelists tell us little of Christ's youth. Joseph was a carpenter, and the occupational heredity usual in that age suggests that Jesus followed that pleasant trade for a time. He knew the craftsmen of his village, and the landlords, stewards, tenants and slaves of his rural surroundings; his speech is studded with them. He was sensitive to the natural beauties of the countryside, to the grace and colour of flowers, and the silent fruitfulness of trees. The story of his questioning the scholars in the

temple is not incredible; he had an alert and curious mind, and in the Near East a boy of twelve already touches maturity. But he had no formal education. "How is it," his neighbours asked, "that this man can read when he has never gone to school?" He attended the synagogue, and heard the Scriptures with evident delight; the Prophets and the Psalms above all sank deep into his memory, and helped to mould him. Perhaps he read also the books of Daniel and Enoch, for his later teaching was shot through with their visions of the Messiah, the Last Judgment, and the coming Kingdom of God.

The air he breathed was tense with religious excitement. Thousands of Jews awaited anxiously the Redeemer of Israel. Magic and witchcraft, demons and angels, "possession" and exorcism, miracles and prophecies, divination and astrology were taken for granted everywhere. Thaumaturgists—wonder-workers—toured the towns. On the annual journeys that all good Palestinian Jews made to Jerusalem, Jesus must have learned something of the Essenes, and their half-monastic, almost Buddhistic, life; possibly he heard also of a sect called "Nazarenes," who dwelt beyond the Jordan in Peraea, rejected Temple worship, and denied the binding character of

the Law. But the experience that aroused him to religious fervour was the preaching of John, the son of Mary's cousin Elizabeth.

Josephus tells John's story in some detail. We tend to picture the Baptist as an old man; on the contrary, he was apparently of the same age as Jesus. Mark and Matthew describe him as garbed in haircloth, living on dried locusts and honey, standing beside the Jordan, and calling people to repentance. He shared the asceticism of the Essenes, but differed from them in holding one baptism to be enough; his name "the Baptist" may be a Greek equivalent of "Essene" (bather). To his rite of symbolic purification John added a menacing condemnation of hypocrisy and loose living, warned sinners to prepare themselves for the Last Judgment, and proclaimed the early coming of the Kingdom of God. If all Judea should repent and be cleansed of sin, said John, the Messiah and the Kingdom would come at once.

In or shortly after "the fifteenth year of Tiberius," says Luke, Jesus came down to the Jordan to be baptized by John. This decision, by a man now "about thirty years old," attested Christ's acceptance of John's teaching; his own would be essentially the same. His methods and character, however, were different: he would

himself never baptize anyone, and he would live not in the wilderness but in the world. Soon after this meeting Herod Antipas, tetrarch ("ruler of four cities") of Galilee, ordered the imprisonment of John. The Gospels ascribe the arrest of John's criticism of Herod's acts in divorcing his wife and marrying Herodias while she was still the wife of his half brother Philip. Josephus attributes the arrest to Herod's fear that John was fomenting a political rebellion in the guise of a religious reformation. Mark and Matthew tell here the story of Salome, Herodias' daugther, who danced so alluringly before Herod that he offered her any reward she might name. At her mother's urging, we are told, she asked for the head of John, and the tetrarch reluctantly accommodated her.

The Mission

When John was imprisoned Jesus took up the Baptist's work, and began to preach the coming of the Kidgdom. He "returned to Galilee," says Luke, "and taught in the synagogues." We have an impressive picture of the young idealist taking his turn at reading the Scriptures to the congregation at Nazareth, and choosing a passage from Isaiah :

The spirit of the Lord is upon me, because he hath anointed me to preach glad tidings to the poor; he hath sent me to heal the broken-hearted, to preach deliverance to captives, and recovery of sight to the blind, to set the down-trodden free.

"The eyes of everyone in the synagogue," Luke adds, "were fixed upon him. And he began by saying to them, 'This passage of Scripture has been fulfilled here in your hearing to-day.' And they all spoke well of him, and were astonished at the winning words that fell from his lips." When the news came that John had been beheaded, and his followers sought a new leader, Jesus assumed the burden and the risk, at first retiring cautiously to quiet villages, always refraining from political controversy, then more and more boldly proclaiming the gospel of repentance, belief, and salvation. Some of his hearers thought he was John risen from the dead.

It is difficult to see him objectively, not only because the evidence is derived from those who worshipped him, but even more because our own moral heritage and ideals are so closely bound up with him and formed on his example that we feel injured in finding any flaw in his character. His religious sensitivity was so keen that he condemned severely those who would

not share his vision; he could forgive any fault but unbelief. There are in the Gospels some bitter passages quite out of key with what else we are told about Christ. He seems to have taken over without scrutiny the harshest contemporary notions of an everlasting hell where unbelievers and unrepentant sinners would suffer from inextinguishable fire and insatiable worms. He tells without protest how the poor man in heaven was not permitted to let a single drop of water fall upon the tongue of the rich man in hell. He counsels nobly, "Judge not, that ye be not judged," but he cursed the men and cities that would not receive his gospel.

We have no portrait of him, nor do the evangelists describe him. We gather from stray words that, like other men of that age and land, he wore a tunic under a cloak, had sandals on his feet, and probably a cloth headdress falling over his shoulders to shield him from the sun. Many women sensed in him a sympathetic tenderness that aroused in them an unstinted devotion. We are told that mothers brought their children to be touched by him, and "he took the children in his arms, laid his hands upon them, and blessed them".

Unlike the prophets, the Essenes, and the Baptist, he was no ascetic. He was not hostile

Christ inherited; and he taught his followers to pray to the Father, "Thy Kingdom come, thy will be done on earth as it is in heaven." Only after that hope had faded did the Gospel of John make Jesus say, "My Kingdom is not of this world." Did he mean a spiritual condition, or a material utopia ? At times he spoke of the Kingdom as a state of soul reached by the pure and sinless—"the Kingdom of God is within you"; at other times he pictured it as a happy future society in which the apostles would be rulers, and those who had given or suffered for Christ's sake would receive a hundredfold reward. He seems to have thought of moral perfection as only metaphorically the Kingdom, as the preparation and price for the Kingdom, and as the condition of all saved souls in the Kingdom when realized.

When would the Kingdom come ? Soon. "I will drink no more of the fruit of the vine until I drink it new in the Kingdom of God." "Ye shall not have gone over the cities of Israel," he told his followers, "till the Son of Man is come." Later he deferred it a bit : "There be some standing here that shall not taste of death till they see the Son of Man coming in the Kingdom"; and "this generation shall not pass till all these things be done". In more politic moments he warned

his apostles : "Of that day and hour knoweth no man, no, not the angles in heaven, neither the Son, but the Father." Certain signs would precede the coming : "wars and rumours of war ...nation will rise against nation...there will be famines and earthquakes...many shall be offended, and...shall hate one another. Many false prophets will appear, many will be misled by them; and because of the increase of wickedness most men's love will grow cold." Sometimes Jesus made the advent of the Kingdom depend and wait upon the conversion of man to God and justice; usually he made its coming an act of God, a sudden and miraculous gift of divine grace.

Christ scorned the man whose chief purpose in life is to amass money and luxuries. He promised hunger and woe to the rich and filled, and comforted the poor with Beatitudes that pledged them the Kingdom. To the rich youth who asked what he should do besides keeping the Commandments, Christ answered: "Sell your property, give your money to the poor, and...follow me." The charge on which Jesus was condemned was that he had plotted to make himself "King of the Jews".

But a conservative can also quote the New Testament to his purpose. Christ made a friend

of Matthew, who continued to be an agent of the Roman power; he uttered no criticism of the civil government, took no known part in the Jewish movement for national liberation, and counselled a submissive gentleness hardly smacking of political revolution. He advised the Pharisees to "render unto Caesar the things that are Caesar's, and unto God the things that are God's." He is not concerned to attack existing economic or political institutions; on the contrary, he condemns those ardent souls who would "take the Kingdom of Heaven by storm". The revolution he sought was a far deeper one, without which reforms could only be superficial and transitory. If he could cleanse the human heart of selfish desire, cruelty, and lust, utopia would come of itself, and all those institutions that rise out of human greed and violence, and the consequent need for law, would disappear.

His achievement lay not in ushering in a new state, but in outlining an ideal morality. His ethical code was predicated on the early coming of the Kingdom, and was designed to make men worthy of entering it. It was an ethic limited in purpose but universal in its scope, for it applied the conception of brotherhood and the Golden Rule to foreigners and enemies as well as to neighbours and friends. It visioned a time when

men would worship God not in temples but "in spirit and truth." in every deed rather than in passing words.

Were these moral ideas new? Nothing is new except arrangement. The central theme of Christ's preaching—the coming Judgment and Kingdom—was already a century old among the Jews. The Law had long since inculcated brotherhood; "Thou shalt love thy neighbour as thyself," said Leviticus; even "the stranger that dwelleth with you shall be unto you as one born among you, and thou shalt love him as thyself." Exodus had commanded the Jews to do good to their enemies. Jeremiah and Isaiah had counselled, "Let him give his cheek to him that smiteth him."

For a long time Christ thought of himself purely as a Jew, sharing the ideas of the prophets, continuing their work, and preaching like them only to Jews. In dispatching his disciples to spread his gospel he sent them only to Jewish cities; "go not into the way of the gentiles, nor into the city of the Samaritans"; hence the apostles, after his death, hesitated to bring the Good News to the "heathen" world. In suggesting modifications and mitigations of the Judaic Law Jesus, like Hillel, did not think that he was overthrowing it; "I came not to destroy the Law of

Moses but to fulfil it." "It is easier for heaven and earth to pass away than for one title of the Law to fail."

Nevertheless, he transformed everything by the force of his character and his feeling. He added to the Law the injunction to prepare for the Kingdom by a life of justice, kindness, and simplicity. He relaxed the code of diet and cleanliness, and omitted certain fasts. He brought religion back from ritual to righteousness, and condemned conspicuous prayers, showy charities, and ornate funerals. He left the impression, at times, that the Judaic Law would be abrogated by the coming of the Kingdom.

Jews of all sects except the Essenes opposed his innovations, and especially resented his assumption of authority to forgive sins and to speak in the name of God.

The final break came from Jesus' growing conviction and clear announcement that he was the Messiah. At first his followers had looked upon him as the successor to John the Baptist; gradually they came to believe that he was the long-awaited Redeemer who would raise Israel out of Roman bondage and establish the reign of God on earth. "Lord," they asked him, "will you at this time restore the kingdom to Israel?" He put them off by saying, "It is not for you to

know the times and seasons which the Father has set"; and he gave an equally vague answer to emissaries of the Baptist who asked him, "Art thou he that was to come?" Gradually, the intense expectations of his followers, and his discovery of his unusual psychic powers, seem to have persuaded him that he had been sent by God, not to restore the sovereignty of Judea, but to prepare men for the reign of God on earth. He did not identify or equate himself with the Father. "Why do you call me good?" he asked; "there is none good but one, that is God." "Not as I will," he prayed in Gethsemane, "but as thou wilt." He took the phrase "Son of Man," which Daniel had made a synonym for the Messiah, used it at first without clearly meaning himself, and ended by applying it to himself in such statements as "The Son of Man is master of the Sabbath"—which seemed high blasphemy to the Pharisees. He called God "Father" at times in no exclusive sense; occasionally, however, he spoke of "my Father," apparently signifying that he was the Son of God in an especial manner or degree. For a long time he forbade the disciples to call him Messiah; but later he approved Peter's recognition of him as "the Christ, the Son of the living God." When, on the last Monday before

his death, he approached Jerusalem to make a final appeal to the people, "the whole throng of his disciples" greeted him with the words, "Blessed is the *king* who comes in the name of the Lord"; and when some Pharisees asked him to reprove this salutation, he answered, "I tell you, if they keep silence, the stones will cry out." The Fourth Gospel reports that the crowd hailed him as "King of Israel." Apparently his followers still thought of him as a political Messiah, who would overthrow the Roman power and make Judea supreme. It was these acclamations that doomed Christ to a revolutionist's death.

Death and Transfiguration

The Feast of the Passover was at hand, and great numbers of Jews were gathering in Jerusalem to offer sacrifice in the Temple. The outer court of the shrine was noisy with vendors selling doves and other sacrificial animals, and with money-changers offering locally acceptable currency for the coins of the Roman realm. Visiting the Temple on the day after his entry into the city, Jesus was shocked by the clamour and commercialism of the booths. In a burst of indignation he and his followers overthrew the tables of the money-changers and the dove

merchants, scattered their coins on the ground, and with "a scourge of rods" drove the traders from the court. For several days thereafter he taught in the Temple, unhindered; but at night he left Jerusalem and stayed on the Mount of Olives, fearing arrest or assassination.

The agents of the government—civil and ecclesiastical, Roman and Jewish—had kept watch on him probably from the time when he had taken up the mission of John the Baptist. His failure to secure a large following had inclined them to ignore him; but his enthusiastic reception in Jerusalem seems to have set the Jewish leaders wondering whether this excitement, working upon the emotional and patriotic Passover throngs, might flare up into an untimely and futile revolt against the Roman power, and issue in the suppression of all self-government and religious freedom in Judea. The high priest called a meeting of the Sanhedrin, and expressed the opinion "that one man should die for the people, instead of the whole nation being destroyed." The majority agreed with him, and the Council ordered the arrest of Christ.

Some news of this decision seems to have reached Jesus, perhaps through members of the Sanhedrin minority. On the fourteenth day of the Jewish month of Nisan (our April third),

probably in the year 30, Jesus and his apostles ate the Seder, or Passover supper, in the home of a friend in Jerusalem. They looked to the Master to free himself by his miraculous powers; he, on the contrary, accepted his fate, and perhaps hoped that his death would be received by God as a sacrificial atonement for the sins of his people. He had been informed that one of the Twelve was conspiring to betray him; and at this last supper he openly accused Judas Iscariot. In accord with Jewish ritual Jesus blessed (in Greek, *eucharistisae*) the wine that he gave the apostles to drink; and then they sang together the Jewish ritual song *Hallel*. He told them, says John, that he would be with them "only a little longer....I give you a new command: Love one another...Let not your hearts be troubled. Believe in God and believe in me. In my Father's house are many mansions...I go to prepare a place for you."

That night, we are told, the little band hid in the Garden of Gethsemane, outside Jerusalem. There a detachment of Temple police found them, and arrested Jesus. He was taken first to the house of Annas, a former high priest, then to that of Caiaphas; according to Mark the "Council"—probably a committee of the Sanhedrin—had already gathered there. Various

witnesses testified against him, especially recalling his threat to destroy the Temple. When Caiaphas asked him whether he was "the Messiah, the Son of God," Jesus is reported to have answered "I am he." In the morning the Sanhedrin met, found him guilty of blasphemy (then a capital crime), and decided to bring him before the Roman procurator, who had come to Jerusalem to keep an eye on the Passover crowds.

Pontius Pilate was a hard man, who would later be summoned to Rome, accused of extortion and cruelty, and removed from office. Nevertheless, it did not seem to him that this mild-mannered preacher was a real danger to the state. Almost playfully he asked Jesus, "Are you the King of the Jews?" According to Matthew Jesus answered, "Yes." Such details, reported presumably from hearsay and long after the event, must be held suspect; if we accept the text we must conclude that Jesus had resolved to die, and that Paul's theory of atonement had some support in Christ. John quotes Jesus as adding: "For this I was born...to give testimony for the truth." After Christ's confession, the law required conviction, and Pilate reluctantly issued the sentence of death.

Crucifixion was a Roman, not a Jewish, form

of punishment. It was usually preceded by scourging, which, carried out thoroughly, left the body a mass of swollen and bloody flesh. The Roman soldiers crowned Christ with a wreath of thorns, mocking his royalty as "King of the Jews." Whether or not Christ was a revolutionist he was obviously condemned as one by Rome. A small crowd, such as could gather in Pilate's courtyard, had called for Christ's execution; now, however, as he climbed the hill of Golgotha, "he was followed by a great crowd of the people," says Luke, and of women who beat their breasts and mourned for him. Quite clearly the condemnation did not have the approval of the Jewish people.

All who cared to witness the horrible spectacle were free to do so; the Romans, who thought it necessary to rule by terror, chose, for capital offences by other than Roman citizens, what Cicero called "the most cruel and hideous of tortures." The offender's hands and feet were bound (seldom nailed) to the wood; a projecting block supported the backbone or the feet; unless mercifully killed, the victim would linger there for two or three days, suffering the agony of immobility, unable to brush away the insects that fed upon his naked flesh, and slowly losing strength until the heart failed and brought an

end. Even the Romans sometimes pitied the victim, and offered him a stupefying drink. The cross, we are told, was raised "at the third hour"—i. e., at nine in the morning. Following the Roman custom, the soldiers divided the garments of the dying men; and as Christ had but one, they cast lots for it.

A soldier, pitying Christ's thirst, held up to his mouth a sponge soaked in sour wine. Jesus drank, and said, "it is consummated." At the ninth hour—at three in the afternoon—he "cried out with a loud voice, and gave up the ghost." Luke adds—again revealing the sympathy of the Jewish populace—that "all the people that came together to that sight...smote their breasts and returned" to the town. Two kindly and influential Jews, having secured Pilate's permission, took the body down from the cross, embalmed it with aloes and myrrh, and placed it in a tomb.

Was he really dead? The two robbers beside him were still alive; their legs were broken by the soldiers so that the weight of the body would hang upon the hands, constricting the circulation and soon stopping the heart. This was not done in Jesus' case, though we are told that a soldier pierced his breast with a lance, drawing forth first blood and then lymph. Pilate expres-

sed surprise that a man should die after six hours of crucifixion; he gave his consent to Christ's removal from the cross only when the centurion in charge assured him of Christ's death.

Two days later Mary Magdalene visited the tomb with "Mary the mother of James, and Salome." They found it empty. "Frightened and yet overjoyed," they ran to tell the news to the disciples. On the way they met one whom they thought to be Jesus; they bowed down before him and clasped his feet. We can imagine the hopeful incredulity with which their report was greeted; the thought that Jesus had triumphed over death, and had thereby proved himself Messiah and Son of God, filled the "Galileans" with such excitement that they were ready for any miracle and any revelation. That same day, we are told, Christ appeared to two disciples on the road to Emmaus, talked with them, and ate with them; for a long time "they were prevented from recognizing him"; but when "he took the bread and blessed it... their eyes were opened, and they knew him, and he vanished from them." The disciples went back to Galilee, and soon thereafter "saw him and bowed down before him, though some were in doubt." While they were fishing they saw

Christ join them; they cast their nets, and drew in a great haul.

Forty days after his appearance to Mary Magdalene, says the beginning of the Book of Acts, Christ ascended physically into heaven. The idea of a saint being so "translated" into the sky in body and life was familiar to the Jews; they told it of Moses, Enoch, Elijah, and Isaiah. The Master went as mystically as he had come; but most of the disciples seem to have been sincerely convinced that he had, after his crucifixion, been with them in the flesh. "They went back with great joy to Jerusalem," says Luke, "and were constantly in the Temple, blessing God."

—Adapted.

ARABIC AND OTHER MOSLEM CIVILIZATION

Arabia

Arabia is a peninsula connected with both Africa and Asia, but geographically somewhat isolated. Although the great empires of antiquity surrounded it, there were few penetrations into the interior. Much of the territory, which is approximately one-third the size of the United States, is high, rocky, and barren, with only a few fertile regions dotted here and there in the valleys of small streams or around oases. In search of water and grass for their cattle, herdsmen travel from one oasis to another, taking their belongings with them. There are a number of small cities along the coast line, but most of the population is migratory.

The People

The Arabs, who were Semitic in their cultural background, loved warfare and were sought by the Persian and Byzantine states to serve in their armies. Armed conflict among the different tribes was common; plundering the borderland cities and robbing caravans were accepted as legitimate

practices. In the typical Arab there was a prevailing individualism and much self reliance. He was not inclined to submit to centralized organizations—political, economic, or social. In spite of the unsettled state of their existence and their wild nomadic life, these people were progressive in many ways.

Religion, the Common Bond

The Arabs lacked the centralized political organization that is characteristic of civilized society. When mention is made of this Arabian or Mohammedan empire, this does not imply the existence of a state with a well-defined boundary, but applies, instead, to many groups of people of varying culture spread over broad territories and bound together by a common devotion to a religious faith. At certain seasons of the year, the tribes endeavoured to make pilgrimages to such favoured spots as Mecca, where the Kaaba, a sanctuary for the famous Black Stone, was a centre of veneration. Fighting stopped for four months in each year, in order that the faithful might congregate at Mecca. The people took advantage of this meeting to exchange wares and bits of learning that they had gathered in their travels. Poets recited their verses and a general celebration was held, after which each group went its own way.

Political Institutions

The central authority, in so far as there was any central authority, was in the hands of the Caliph, the successor of Mohammed. He was both a temporal ruler and a religious potentate. To question his authority was considered a revolt against Allah. He was the supreme power acting in the common interest. The Ommiad dynasty (661-750) ma de Damascus the capital; but the succeeding dynasty (the Abbasids) chose Baghdad, where they built a beautiful palace, called the Golden Gate, and ruled in Oriental splendour and despotism. The city became a thriving commercial and intellectual centre. The Caliph was supposed to protect the faith, to advance the power of Islam, and to promote the welfare of his people. The people had very little part in the government, but many of the tribes were far enough away to be practically independent.

Economic Life

The Arabs were a commercial people, almost by instinct. Three continents—Africa, Asia and Europe—were connected through the efforts of Arabian merchants; and the Arabic language was the language of commerce. Connections between trade centres were established through couriers; some of the messengers travelled on horseback as

far as 750 miles in three days. The leading agriculturists of their time were the Arabs, who practised crop rotation, used fertilizers, and established irrigation projects. They introduced into Europe spinach, asparagus, strawberries, lemons, dates, cotton, rice, sugarcane, and pomegranates. Their manufactured products were armour, steel weapons, glassware, rose water, leather goods, textiles and porcelain.

Architecture

Mosques and palaces were the chief architectural works of the Mohammedans. The mosque required a fountain for the ablution of the worshipper before prayer, a roof to protect him from the hot sun, a pulpit from which the sermon was preached on the Mohammedan holy day, and a raised platform from which the Koran was recited and the prayers were chanted. The sanctuary and the portal were elaborately decorated with plaster, wood carvings, marble inlay, and coloured glass. Frequently, wood was inlaid with ivory and ebony. Geometric patterns made up of small polygons, carved in floral designs and finished with a beading, were the decorative motifs most extensively followed. The artists obtained colour and brilliance by

painting the wood carvings and by using stained-glass windows and coloured marbles. The Alhambra in Granada stands as a monument to the richness of Oriental colour and design. It is built around an open court, overlooking which are rooms and balconies. The interior walls of the rooms are covered with bright-coloured designs in blue, red, yellow, and gold.

The Minor Arts

The Mohammedans excelled in the minor arts. Their artistic tastes found expression in metalwork, decorations for lamps, and the illumination of manuscripts of the Koran. An inscription in large letters intertwined with rosettes was a motif frequently used in metalwork. Glass mosque lamps were decorated with the blue, white, yellow, green, red, and gilt enamel. The decoration of manuscripts of the Koran represents one of the finest and most delicate works of these artists. Frequently, the text was written in gold, supported by a vivid blue, with a little red, white, black, or green to set it off. Cottons, silks, damasks, and satins were woven with utmost care in patterns of carefully designed birds, animals, and geometric forms. All these productions found a ready market in the West.

Religious Cults

The Arabian desert was the mother of religions. The cult of Ishtar, Judaism, Christianity, and Islam and countless others of lesser importance sprang up here. Belief in the mystical powers of a black rock enshrined in the Kaaba, in the city of Mecca, was about the only religious unity that existed among the various Arabian tribes. Most of them were represented at an annual convention in Mecca to worship at the Kaaba, although they were separated and isolated during the remainder of the time. There were four months in the year during which they forgot their warfare and, while they were on their way to Mecca, they were as safe from molestation as they would have been in any country in the world.

Foundation of Islam

Mohammed, the founder of Islam, was born in Mecca, ca. 571. He assumed the title of Praised One, much the same as Gautama acquired the name Enlightened One, and as Jesus came to be called the Anointed One.

In the Koran the faithful are charged to serve but one God, to honour their fellow men (especially their parents, the poor, and

orphans), to be honest, to be frugal, and to be temperate.

Character of Islam

The form of worship is much simpler than that practised in most Christian churches. There is no priesthood, in the Christian sense of the word, and the mosque is a place for prayer and for reading the Koran, rather than for a formal service. It is a personal and individualistic religion; the faithful Mohammedan needs no intermediary between himself and his God. The form of worship is to recite the creed ("There is but one God, and Mohammed is His Prophet"), to pray five times a day, to fast, to give alms to the poor, and to make at least one pilgrimage to Mecca.

Spread of Mohammedanism

Mohammed was driven from Mecca by his enemies in 622. His flight to Medina, called the Hegira, was the turning point in the development of Mohammedanism, since from that time it began to spread. The enthusiastic bearers of the faith crossed North Africa, spread into Spain, and went as far north as Tours in France, where they were defeated in battle in 732, just a century after the death of Moham-

med. They maintained their hold in Spain until the close of the 15th century, and they are still predominant in northern Africa. In the middle of the 15th century, the Ottoman Turks, having accepted Islam, conquered Constantinople and pushed northward through the Balkan peninsula to the very gates of Vienna, where they were stopped in a bloody battle in 1529. Twice, the Mohammedans made a serious threat to overrun Europe; twice, Christendom had a narrow escape. Islam met with less opposition in its spread eastward into India and China.

Estimate

Polygamy was sanctioned and justified in the Koran. Polygamy, it may be remembered, was quite generally accepted in these countries before Mohammedanism was introduced—in fact, the adoption of Mohammedanism improved the status of women among the desert tribes. Under its tenets, infanticide for girls was condemned and the number of wives a man might have was limited.

Mohammed was a religious teacher and a social reformer, and the Koran is both a book of religion and a book of law. The conduct of life and details of etiquette are carefully regulated. Wines and other intoxicating liquors are pro-

hibited, as is gambling. Infanticide and murder are condemned, and kindlier treatment of slaves is recommended. The Mohammedan form of worship is extremely simple. Religion, to the faithful Mohammedan, is an everyday affair, not a concentration of religious practices into one holy day in the week.

Literature

Much of the literature of the Arabs was not written until after it had passed from mouth to mouth for many generations. They took great pride in reciting their poems and had no trouble in finding enthusiastic listeners. Two very necessary qualities for the production of good literature were theirs—a clear and concise way of expressing themselves and vivid imagination. Much of their literature idealized the people as fierce, bold, hospitable, and truthful. Their histories and biogarphies were numerous.

Poetry was a favourite form of literary expression. Omar Khayyam (12th century) was the author of the *Rubaiyat*, the best known of the Moslem poems. *Gulistan* and *Bostan*, mythical and philosophical odes, were written by Saadi (late 13th century). In prose literature, *The Arabian Nights* is the most famous work. Almost everyone has read at least parts of this great

tale and has been entertained by it. Within it is included a great variety of material: proverbs, adventures, and fables, covering territory all the way from China to western Europe. The Arabs, deeply interested in the scientific development of their language, worked out dictionaries, grammars, and books on philology. A language beautiful in expression and scientific in organization was perfected by the 13th century.

Science

One of the first things that the Moslems did when they conquered a territory was to build a mosque. To this building they frequently attached a school, the main purpose of which was to teach the people to read the Koran. Science, literature, and art were ultimately added to the list of subjects taught. Free from the influence of Christian theology, the scientific contributions of the Greek scholars were preserved and expanded. In this way, the scientific works of Aristotle, Galen, and Euclid were passed on to Western civilization. Moslems built universities and libraries in Spain. The University of Salerno, in Italy, was one of the first to teach scientific medicine. Major operations were performed and the insane were treated scientifically. Moslem scientists discovered alcohol, potash, nitrate of silver, nitric and sulphuric

acids. They had learned the secrets of dyeing and discovered a new process for making paper. They knew, also, how to graft trees and plants so as to produce new varieties.

The prestige of the Moslem scholars in the field of mathematics is indicated by the mathematical terms that we borrowed from them: *zero*, *cipher*, and *algebra*. They developed algebra to second-degree equations. They invented the tangent and the cotangent in trigonometry. In physics, they discovered the principle of the pendulum. Geographers, with the use of physics and mathematics, made accurate measurements of latitude and longitude. They wrote descriptive geography and deduced principles of geographical science.

Evaluation

Moslem civilization was composite. It gathered ideas from the civilizations of India, Byzantium, Persia, and Egypt. The Moslems continued the work begun in these earlier cultures and passed it on to Western peoples to serve as a part of the foundation of the Renaissance. Medicine, astronomy, mathematics, physics, chemistry, and art of the West depended much upon Arabic knowledge. Thomas, Aquinas, whose work served as a bridge between the

medieval and modern ages, was influenced greatly by the Arabs.

—Adapted

THE RENAISSANCE

The origins of the Renaissance and its highest development are to be found in Italy, from where it spread very gradually into the other countries of western and northern Europe. In some countries, as for example, in England, the Renaissance hardly made itself felt until it was long past its peak in Italy. In a general sense, and in some particular aspects, as for example, architecture and the physical and philosophical sciences, the effects of the Renaissance are still a living force in many parts of the world. The rough limits which can be ascribed to the Renaissance proper, as distinct from its continuing results, are the fourteenth, fifteenth, and early sixteenth centuries.

The Renaissance may be described or defined as the new spirit which, from a variety of causes shortly to be set down, appeared in man's outlook in the latter part of the Middle Ages. During the greater part of the Middle Ages, although there had, of course, always been figures, who were less bound by the conventions of their era than the great majority of even educated men, it is true to say that in matters of thought and culture there

was little individualism. There was plenty of it in the fields of politics and war; but education, thought, and religion were dominated, by the teachings of the Church and the approach, methods, and fixed conceptions of the scholastic philosophy. This system was at its height in the thirteenth century by the end of which it was in decline; and during the fourteenth century it became clear that in future man was no longer going to be content to follow, as one of a great European Christian community, the tenets laid down and the paths indicated to him by authority, but was preparing to strike out along many individual and national lines, even if it meant sometimes travelling along prohibited and dangerous paths.

Causes of the Renaissance

The causes of these great changes are manifold. They include factors such as the growth of towns, the decline of feudalism, the development of trade and banking, and the consequent increase in wealth and in the requirements of a middle class civilization, the failure of the system of scholasticism, the development of the universities and of scientific knowledge, the decline in the prestige of the Church, and the revived interest in the classical literature and history of Greece and Rome.

This revival of interest in the classics was a manifestation as well as a cause of the Renaissance.

Here it will perhaps be as well to clear up a common misconception on this point, which in part arises from, and is in part the reason for, the name Renaissance. This is the idea that there was a sudden rebirth of classical learning in the fourteenth century, that men suddenly rediscovered the existence of classical literature and arts. There may be a considerable element of truth in the idea as far as the arts of Greece and Rome, and Greek literature, are concerned, but it is not at all true of Latin literature. The study of Latin had, of course, never died out entirely even during the darkest of the Dark Ages, and it was continuously cultivated in the monasteries, and received encouragement from enlightened rules such as Charlemagne and Alfred the Great. Nor must it be forgotten that at Constantinople the official language was Greek throughout the Middle Ages.

It is much more true that Greek and Roman arts and sciences were largely lost to the West between about 500 A.D. and 1350 A.D., except through Arabic translations and adaptations, and for their rediscovery the term Renaissance is not entirely inappropriate; whilst it must be admitted that in its general sense of the new spirit of man

once he had thrown off his mediaeval chains, the term is valuable and significant. Scientific developments will be dealt with at the end of this chapter, because they provide the vital link between the old world and the new.

Painting, Sculpture, and Architecture

Until the fourteenth century it may be said that there existed in Europe a stylised art of an international character. This was particularly true of painting, and to a less extent of sculpture, in which the Gothic sculptors of the Middle Ages did frequently abandon the stiffness and artificiality so typical of the painting of the period, and permitted themselves a considerable freedom and attention to natural detail. The nature of the Renaissance in painting and, with this qualification in sculpture, is twofold; it brought the gradual abandonment of the stiff artificiality, on the one hand, and substitution for it of naturalness, obtained by the close observation and representation of Nature and the use of the newly discovered principles of perspective, and, on the other hand, the development of national peculiarities.

This intense interest in scientific principles is closely linked with the impact of the revival of the study of Greek and Latin texts, many of them newly discovered, and also of Graeco-Roman

remains, which were closely examined, measured, reconstructed in the imagination, and adapted and used in the solution of contemporary problems. In architecture this was especially the case; but there was not, as is sometimes believed, a complete abandonment of mediaeval practice, and the re-adoption of classical methods. Much of the building practice of the mediaevalists was retained. Certain forms—the dome, the three orders of pillar, the lintel-type doorways—were re-adopted, and used for the building, not of triumphal arches, temples, and amphitheatres, but of the kind of buildings required by the new middle classes and aristocracy—guild halls, council halls, market halls, bridges, churches, and innumerable splendid family houses and palaces.

These developments began, as was natural, in Italy, where the new middle class society of the towns was by the fourteenth century more advanced than elsewhere in Europe. Giotto (1266-1337) was the artist in whom the new trends first clearly emerge, although in other countries there is evidence of the influence of a similar spirit a little later. Even in England, which generally speaking, was exceedingly slow to adopt the new ideas, the idea of portrait-painting of living people, instead of stylised representations of biblical or mythological figures, can be observed

in operation, as in the famous case of the portrait of Richard II.

Giotto was a Florentine, but his most famous work was done in a chapel in Padua. Working in fresco, he achieved an effect of perspective which produced astonishingly realistic pictures, three-dimensional in character, and of a reality which no mediaeval painter had yet achieved. At Florence a group of artists and architects, completely imbued with the new spirit, achieved an artistic revolution.

In painting Masaccio (1401-1428?), in sculptrue Donatello(1386-1466) ardently pursued the aim of naturalness and reality, and scientific accuracy in natural, especially anatomical, detail. In the north, Jan van Eyck (1390-1441), inventor of oil-painting, which was quickly adopted in Italy, carried the search one stage farther towards reality and technical perfection. Round such masters, national schools of the arts began to develop in all the great cities of Europe, and although there was much interchange of visits, ideas, and experience between them, the old cosmopolitan uniformity was gone.

The peak of Renaissance achievement, the so-called High Renaissance, comes in Italy at the end of the fifteenth and during the first half of the sixteenth centuries. The age is crowded with

geniuses, any one of which would have made a lesser age notable. As in ancient Greece or Shakespeare's England, conditions were highly favourable for the breeding of genius. The workshops of painting, sculpture, and architecture gave an unsurpassable training to those with talent, and the wealthy, ambitious, and mutually jealous cities and princes competed for the services of the best artists. This gave to the artist great freedom, which he was well-fitted to use, and to which the individual experimentation with the new techniques gave added interest.

It was in Florence and Venice that the High Renaissance achieved its greatest glories. The genius of widest scope was that of Leonardo da Vinci (1452-1519). He received an artistic and semi-scientific training in the workshop of Verocchio, himself a leading painter and sculptor in Florence. Here he acquired the habit of thinking, reading, researching, and writing notes and making drawings in connection with almost every conceivable topic. Even flying-machines and submarines are represented in his note-books. His genius was so universal that he became the most-sought-after miltary and civil engineer of his day, as well as one of the very greatest artists. The "Last Supper" and the "Mona Lisa" are his masterpieces.

Friendly rival of Leonardo was the younger and longer-lived Michelangelo (1475-1564). He, too, was trained in a Florentine workshop. Michelangelo devoted laborious days to the study of anatomy and perspective. His progress was so rapid that by 1504 he was reckoned almost the equal of Leonardo, and could afford to pick and choose. A man of fiery temper, he was jealous of Bramante, the elderly architect whom the Pope had chosen to build the new St. Peter's. On Bramante's death it eventually fell to Michelangelo's lot to complete the dome; but meanwhile in the Sistine Chapel at Rome he achieved in four years of arduous and unassisted work the most impressive and beautiful series of paintings of their kind in the world. He did great work in sculpture and architecture, but the vault of the Sistine Chapel was his masterpiece. After its completion he reached a position of fame and dignity such as no artist had since the days of Athens.

The third painter who in this period achieved for Florence undying fame as the greatest patron city of the arts was Raphael (1483-1520). He is a gentler figure, and perhaps for that reason the best loved of all. His training was under Perugino of the Umbrian School. Perugino and his friends had taught an excellent technique,

which in the hands of a genius like Raphael produced paintings so excellent and so near to perfection as to give an impression of simplicity to the ordinary man. This is perhaps why Raphael's are so beloved. Raphael is known by his Madonnas to a wide public, but it must not be forgotten that his genius manifested itself in many other fields, including murals, portraits, and architecture.

Florence was first, but Venice, which clung longer than other Italian cities to the old ways, when it did enter the field, achieved results so splendid as almost to rival those of Florence. Titian (1477-1576) was the most famous exponent of the brilliant colour work for which the Venetian school was famous, and was also a great portrait-painter.

By this time the Renaissance had reached the north, and men like Albrecht Durer (1471-1528) of Nuremberg, and Hans Holbein (1498?-1543) the Younger, son of Hans Holbein the Elder, of Augsburg, the one famous for his woodcuts and engravings, the other for his portraits of famous characters, were striving to appreciate the full meaning of the new Italian art, and transfer the best of it north of th Alps. Germany's greatest contribution, however, to spreading the spirit of the Renaissance was the invention of printing, by

John Gutenberg of Mainz, or another/the person, and the date, are disputed—which made possible the printing of millions of books before the turn of the century, and the making available to a wide public of the multitude of new ideas which the century had produced.

In France, closely in contact with Italy at the end of the fifteenth and beginning of the sixteenth centuries through its warlike Kings Charles VIII, Louis XII, and Francis, an artistic struggle between the new ideas in art and the Gothic art, which was especially well-beloved in France, took place. The Court and the nobility on the whole supported the Italian ideas, and French art and architecture gradually became Italianate. Spain succumbed more quickly, and indeed the whole of the sixteenth and much of the seventeenth century was a time of great cultural and artistic splendour in Spain.

Renaissance Literature

The Renaissance was nowhere, of course, concerned exclusively with the plastic arts. The new movement in literature, which during the fourteenth century was the prelude to and part of the initial stages of the Renaissance, continued, and there is a literary Renaissance parallel with that in the arts. In Italy, Machiavelli and the

poet Ariosto, in France Rabelais and Montaigne, the creators of modern French prose, the Dutch cosmopolitan Erasmus, in Germany Luther, in England the translators of the Bible and Shakespeare himself, are all figures of the Renaissance. Merging in the religious sphere with the Reformation, and in conjunction with the revelation of the New World, the Renaissance may be said to be the bridge between the Middle Ages and the modern world. A main arch in this bridge was the new scientific spirit, whose achievements have, more than any other work of man, produced the modern world.

Arabic science, in its main subdivisions of alchemy, medicine, mathematics, astronomy, and physics, and itself based on earlier Greek and Eastern studies, had penetrated the West before A.D. 1200, and compelled the Western Christian Church to adopt and adapt the teachings of Aristotle, in as far as they were at this time known through translations. By the middle of the thirteenth century the Church had lifted its earlier prohibition of Aristotle; and all Western science now became based on the Aristotelian conception of the universe, with its uniform system of concentric spheres, and the supposed influence of the fixed stars and the planets on life on the earth.

Renaissance Science

The revival of classical, and especially Greek, studies produced great results in the arts and religion. In science, the results were at first more meagre, mainly because until the advent of printing the older versions through Arabic remained current; and even after the advent of printing, few scientific works were at first printed, so that the old manuscripts remained the basis of study. Not until 1533 were Greek editions of Euclid and Ptolemy's Geography available. The great majority of sixteenth-century, scientific texts, both in Greek and Latin, were medical, especially the works of Hippocrates and Galen.

The humanists, the ardent students of Greek literature, were for the most part not very interested in science. They were far more concerned with literature and art, whilst the most-universal scientific as well as artistic genius of the age, Leonardo da Vinci, knew no Greek and little Latin.

More important for the advance of science than the study of Greek was the revival of the study of nature and the universe by observation, which was an essential step to the eventual triumph, from the seventeenth century onwards, of the scientific method of collection, collation, and interpretation of data, together with experimentation.

The revival took place first in botany, since this study was closely linked with the popular medical studies of the day, whilst in anatomy Andreas Vesalius (1514-1564), a Flemish professor at Padua, in 1543 revolutionised theory and practice with his celebrated book "On the Fabric of the Human Body". In astronomy, the Pole, Nicholas Copernicus (1473-1543), whilst clinging to much of the old theory, and basing his work on mathematics rather than observation, took the first step towards revolutionising that theory by his new and bold thesis of the motion of the earth. Giordano Burno (1547?-1600), of Naples, took up the ideas of the movement of the earth and the infinity of the universe already tentatively propounded by Nicholas of Cusa in the fifteenth century, and developed them with such enthusiasm that the Church, horrified by the conflict of his ideas with the orthodox conception of a fixed and limited creation, apprehended him and handed him over to the Inquisition. He was burned at the stake in 1600.

The next stage in the scientific revolution was a series of improvements in Mathematics which were essential for further development. John Napier (1550-1617), a Scot, invented logarithms. The Frenchman, Descartes(1596-1650), made great advances in general mathe-

matics and in scientific method in relation to all sciences, whilst the Dutchman, Christian Huygens (1629-1695), was a universal mathematical genius who did great works, especially in the study of light and optics.

The term "the Galilean revolution" suggests the outstanding name in the transition from mediaeval science to modern science: that of Galileo Galilei (1564-1642). His famous and simple experiment with weights dropped from the Tower of Pisa, where he was a professor, was only one of a multitude in many fields. He is most famous for his adoption and conclusive proof and development of Copernican theories, but his most enduring achievement was the adoption of a new system of measurement and experimentation with bodies and forces which produced modern dynamics, radically altered scientific method, and led him to prepare the way for the discoveries of Newton later in the century. Like Bruno earlier, he was faced with the hostility of orthodox theology, and in 1633 was compelled by threat of the stake to deny the teachings embodied in his great work of 1632, the "Dialogue on the Two Chief Systems of the World". He lingered on, confined by order of the Inquisition to his villa near Florence, and in his later years blind, until his death in 1642.

There are numerous other aspects and figures of the scientific revolution which might be mentioned in the period leading up to Newton, whose work epitomises the revolution; but it is only possible to mention a few in the space available. It is clear that the advances described could only have been made with accurate instruments, and it is, in fact, a notable feature of the period that the profession of scientific instrument-maker was founded at this time. Galileo is associated with this development, too, not only from his invention of an effective telescope and microscope, but also from his encouragement of a high standard of precision among the workers he employed. As the new telescopes led to great advances in astronomical knowledge, so did the microscope in knowledge of the structure of terrestrial bodies, whilst the two together led to the modern conception of an infinite and mathematically explicable universe.

The foundations of modern chemistry and physics were laid by men like Galileo's pupil, Torricelli, inventor of the barometer, and Robert Hooke (1635-1703) and Robert Boyle (1627-1691) of Oxford, whose researches into the qualities of air led them to the discovery of oxygen and to a more advanced atomic theory. In medicine, William Harvey, another Englishman, made pub-

lic in 1628 his great discovery of the circulation of blood, whilst many workers with the new microscopes helped in the fields of medicine and biology. Their researches were encouraged and often published by the numerous learned and scientific societies which sprang up in the West during the latter part of the seventeenth century, one of the earliest being the Royal Society in England (constituted in 1660).

If the first stage in this revolution be properly called Galilean, then the epitome of the whole revolution is to be found in the career of Isaac Newton (1642-1727), who took the best of the ideas of Copernicus, Bruno, and Galileo, testing and adding to them by experiments conducted with originality and brilliance, but also with the most exacting adherence to rigorous standards, and worked out a credible and, so far as it went, complete system not only for the earth and its more immediate neighbours, but for the whole universe. This system, based largely on mathematics, he embodied in 1687 in the book of which the short title is the "Principia"; and his interpretation of the effects of gravity on all earthly and heavenly bodies remains largely intact until the present day. His fame rests mainly on this achievement; but numerous other achievements are associated with his name, any one of which

would have won him fame. His work on the spectrum and in mathematics, especially geometry and calculus, in which he rivalled his contemporary, Leibniz, is particularly notable.

With Newton, the history of modern science may be said to have begun, and the momentous discoveries of the eighteenth, nineteenth, and twentieth centuries, with the practical application of them which, since the Industrial Revolution, has created a new world, were made on the basis of the scientific method of which his work was the first great example. The immediate scientific consequences of the Renaissance were slight, its ultimate effects on the world of science incalculable.

—Adapted

THE INDUSTRIAL REVOLUTION

What Industrialism means

Adam Smith wrote in 1776 that the English were "a nation of shopkeepers". Edmund Burke in 1790 lamented the Age of Chivalry had gone and that the age of "economists, sophisters and calculators" had succeeded it. Each of these men was dimly aware of a change that was beginning in England, far more profound and complete than the changes brought about by war and politics, the change from an *Agrarian* to an *Industrial* civilization. This gradual transformation, which was taking place most rapidly during the time of the war with the French Republic, is not yet complete; it is now spreading as rapidly from England to all other countries: historians call it the *Industrial Revolution.*

What has happened may be described by a comparison between England in 1700 and England in 1900.

In 1700 the population of England was about 6,000,000.
In 1900 „ „ „ 36,000,000.
In 1700 four-fifths of English men lived in the country.

In 1900 four-fifths of Englishmen lived in the towns.

In 1700 England was a land of farmers who produced corn and meat and wool sufficient for the nation, and sometimes in good years exported the surplus to foreign lands.

In 1900 England was a land of manufacturers who sold goods in foreign lands, and used the proceeds to buy in Canada, Argentina, New Zealand, Australia, and the United States, the food and raw materials which we can no longer produce at home in quantities large enough for our huge population.

In 1700 England was still a poor country. For example the Government could only raise a revenue of seven million pounds a year. In 1931 the government was able to raise £770,000,000 by taxes levied on the people.

The Agrarian Revolution

England, like most other countries since the dawn of history and like many countries today, was in 1700 a land of village communities. Most people lived in villages and were farmers or dependent on farming. Each village still grew its own food, and most villagers still wore clothes of home-made cloth, the wool spun into yarn on their wives' spinning wheels, the yarn

woven into cloth on the hand-loom of the village weaver. Land was still farmed in common in many villages—that is, the village owned three large fields, and every villager by ancient custom was entitled to a certain number of acre strips in each common field. The squire and the parson would also hold strips in the common fields and one or the other of them would probably be Justice of the Peace. Beyond the three fields lay the common grazing lands where all villagers pastured their beasts.

As scientific improvements were made in agriculture this system of strip-cultivation grew more difficult to work. In the early eighteenth century many new experiments were made. Of these the most important was the introduction of root crops, turnips, swedes, mangolds, etc. Turnips supplied winter food for sheep and cattle, which made it possible to fatten beasts and to have fresh throughout the winter. With attention paid to their food the breed of sheep and cattle improved. But no breeder of fat cattle would wish to pasture his stock on the scanty feed of the common lands. He would prefer private grazing. On the other hand, it was found that by a new *rotation of crops* less land than formerly lay idle. It had been the custom to grow wheat one year, barley the follow-

ing year, and in the third year let the land lie fallow. It was now discovered that if turnips were grown after wheat, and next year barley followed by clover, the land would be fit to grow wheat again without a year having been wasted while it lay fallow. But these experiments could not be carried out in a village where different farmers held strips in the same field, some objecting to the experiment, and others not being able to afford the expense.

Hence came a steady demand for the *Enclosure* of common fields. An improving landlord, with money to spend on ditching and draining, farming machinery and pedigree stock, would wish to convert the open fields into enclosed farms, but this he could only do by consent of his neighbours. The usual method was for the squire, who perhaps was an M.P., to obtain a private Act of Parliament empowering him to "enclose" such-and-such a village by agreement with the villagers and to compensate all the commoners, that is, all who held strips in the common fields. More than three thousand enclosure Acts were passed during the reign of George III. When the villagers met to arrange the enclosure, the squire would probably buy out some of them for cash down. Others who preferred to have their thirty acre strips con-

verted into a small enclosed farm would not be able to afford the new improvements. They could not compete with the farmer who had capital, and sooner or later they would sell out. In most cases the whole land of the village became the property of the squire, and to this day most of the agricultural land of England is owned by a few thousand great landlords.

What happened to the peasants who had been bought out? Some drifted into the towns to work in the new factories; others stayed in the villages to work as labourers for wages. Though the land was far richer, they were far poorer than before. Whether there was a good or bad harvest there was no chance of their making more money, and very often they lost even the common pasture-lands for grazing a cow or pigs or goats. Where a "Common" still remains in England it is usually barren land which was not worth enclosing. Hence the country labourers lost their sturdy pride and independence.

The Factory System

Just as the improvements in farming made England rich but ruined the peasantry, so at the same time the rise of factory labour deprived the poor of another standby, the spinning of yarn and weaving of cloth in their homes. In 1733 John

Kay invented a machine called the Flying Shuttle, the first of a series of inventions in weaving which quite displaced hand-looms. Machine looms were erected in factories by capitalists who hired workmen and could then produce cloth much more cheaply by machinery than the cottage weavers could make it by hand. Hence those cottagers who depended on hand-weaving to add to their livelihood either lost this support or had to move into manufacturing towns and work for wages. At first the new factories demanded more and more spun yarn, which kept the spinning-wheels busy in every home, but the turn of the spinners was coming. In 1764 Richard Hargreaves invented a machine called the Spinning Jenny whereby eight spindles could be worked by one person. Yarn spun on the jenny was then nearly eight times as cheap to produce as that spun by hand. So in their turn the spinning-wheels were driven out of business by the machines. Further development in spinning was made by the machine called Crompton's Mule.

In the case of spinning and weaving, two of the commonest of domestic industries and the first to be industrialised, the principle may be seen by which almost all industries in England have moved from the home to the factory. Each new invention throws out of work the old handi-

craftsmen, while new jobs are made elsewhere for factory workers. A period of hardship for the unemployed is followed by an advantage to everyone else because factory-made goods are so much cheaper than home-made goods. The text le trades, cotton centred in Lancashire and wool in Yorkshire, now two of England's "basic industries", prospered to an astonishing degree about a hundred years ago because of these inventions.

Power

Until the reign of king George III four kinds of power weie available for man's needs, and no new source of power had been developed for five thousand years. They were man-power, horse-pow r, the power of wind in wind-mills, and the power of watei in water-mills. The new machines, which could hardly be turned by hand, needed power, and demanded that factories should be built where streams with strong and steady flow might be used to turn water-wheels and develop water-power. Water-mills were so commonly the source of power for factories at first that, in the north, factories came to be known as mills.

The demand for power soon led ingenious men to develop new and cheaper foims of it. The

principle of the steam-engine was already well known. Before the Christian era Greek scientists at the University of Alexandria had made experiments with steam-power. These had been advanced by the members of the Royal Society in the days of Charles II and before 1700 steam-engines were in use for pumping water out of mines. In the early days of the Industrial Revolution many minds were turned to the problem of using steam to drive the new machines. Among them James Watt is generally remembered as the man who produced a reliable and economical steam-engine, in which the steam pressure in the cylinder was controlled by valves; the steam was employed to drive the piston backwards as well as forwards in the cylinder; and the piston was attached to a crank which turned a wheel, instead of merely working up and down as the old pumping engines had done. In 1775 he went into partnership with Matthew Boulton, an enterprising business man, who organised the firm of *Watt and Boulton* on Snow Hill, Birmingham. Their first engine, which was in use for more than a hundred years, is still to be seen at the science Museum in South Kensington in perfect running order. The first steam-mill in Lancashire, combining the various inventions

so far described, was opened in the fateful year 1789.

Coal and Iron

Until the demand for machinery arose, the iron and steel trade was but a small affair. Iron was dug up as ore, smelted in a charcoal furnace and worked up into smallish "pigs" of metal soft enough to be hammered or "wrought" into the required shape. From this iron very small quantities were converted into highly tempered steel for knives and razors at Sheffield, an old manufacturing district. Iron ore was to be found in several parts of England, but it was only used in those districts where there were also oak forests handy for making charcoal. With the Industrial Revolution came a demand for more and cheaper iron in large pieces. Partly for this reason and partly because the forests were giving out, iron-masters set to work and discovered how to smelt iron ore with coal instead of charcoal, and the industry moved out of the woods into the coal-fields. Hence came into existence the "black country" of Staffordshire and Worcestershire, where great new towns sprang up because coal and iron ore were found close together. Coal had been dug at Newcastle since the dawn of history to be carried by sea to London, where

every householder had long used "sea-coal" fires. It was a new thing to use coal in industry. After cotton and wool, iron and coal grew to be the basic industries of the nation in the late eighteenth century. Iron smelted by coal was produced generally as "cast iron", that is, it was poured into a mould while liquid and allowed to set in the required shape instead of being hammered into shape as it cooled. Much larger objects were made in cast iron than in wrought iron, first the great pistons and cylinders of James Watt's engines; then girders from which factories and bridges could be made (the first iron bridge was put over the Severn in 1779), then many years later iron plates from which ocean-going ships were made. The first battleship built of iron plates was the *Warrior* (1860). In the nineteenth century many further inventions, such as Bessemer's "converter" (1856), made it possible to produce steel, too, in large quantities, and steel is now the material from which are made many things which 100 years ago would have been made of iron, and 200 years ago could not have been made at all.

Improved Communications

In primitive countries the best means of travel is by water, round the coast or up the

rivers near which towns first spring up. Cross-country tracks soon marked the easiest way from town to town, but road-making is so expensive a business that only wealthy and civilized nations can afford it. Until the eighteenth century the history of communications in England is a scanty tale. Roughly speaking, it may be said that no new roads were built in England between the days of the Romans and the days of George III. In the towns streets were paved and very fine bridges often built, but in the country it was nobody's business to make good roads. The law said that every parish was responsible for keeping a "right-of-way" open where one had formerly existed, but the people in a parish are not those who make most use of a road running through it, and they paid no more attention than to keep it just passable enough to prevent travellers driving a round a bad place through the crops. The growth of trade, in the age we are considering, made better communications necessary, so that in the last 150 years four waves of improvement have successively made travelling easier: first roads, then canals, then railways and, in the twentieth century, roads again.

The new system of upkeep introduced in 1663 was by turnpikes. Year by year, whenever an

old road was to be mended or a new one made, an Act of Parliament was passed allowing a man to raise the necessary money by collecting tolls at a turnpike gate from every one who passed along it—thus making those people who used the road pay for it. By this means great numbers of new roads were made, and a new science of road engineering arose. Greatest of English road-makers was James Telford, whose Holyhead Road, completed in 1817, crossing the Menai Straits by fine iron suspension bridge, has no gradient even in the Welsh mountains too steep for a horse to trot up or down. About 1819 a Scotch engineer, John Macadam, invented the method, now called "macadamising", of constructing the road surface of rolled and crushed stones. Turnpikes have gradually been removed from most roads which since 1888 have been kept up by the new country councils. Since the Great War the Government at Westminster has made itself steadily more responsible for the national road system. The English high roads, which were the wonder of the world a hundred years ago (as they are becoming again to-day), made travelling more easy and pleasant than ever before.

While letters and travellers went by road, heavy goods went by water. The coaching age was also the age of canals. In France under

Louis XIV canals had been made by which much of the inland trade of that country still travels; in England little was done before about 1750 and now what was done has come almost to nothing; but between 1750 and 1830 thousands of miles of navigable canals were dug through the length and breadth of England.

When railways were introduced the canals received a fatal blow, and even the roads were abandoned for sixty years until the coming of the motor-car.

Condition of the Working Classes

It is sad to relate that in spite of the growing wealth of the nation and the scientific inventions, the working classes in England were at first made poorer and not richer by the Industrial Revolution. A hundred years ago the governing classes were imbued with the ideas of Adam Smith who taught that the best thing a Government can do is to leave people alone. By this principle of non-interference he proposed that enterprise would be encouraged. Since every man knew his own business best, every man would strive to succeed and grow wealthier without Government interference. The one flaw in this theory is that the poor are not able to pursue their best interest when ground down by the rich, as they were in

the new industrial towns. Having lost their land in the enclosure movement, they had to work in the new factories or starve. There were at that time no Factory Acts ensuring the safety and health of the workers, and no limit to the employment of women and children. Hence some bad employers preferred to hire small children for trifling wages instead of hiring men who cost more. In the old village life there had been a friendly feeling between squire and parson on the one hand and cottagers on the other. If the cottagers had been poor they had at least the chance to grow vegetables in their garden or keep pigs on the common; they had the church and perhaps a village school. In the new towns they had none of these things, only long hours of work and low wages. The Government did little or nothing. This had much more serious results than it would at the present day because the working-classes had no means of helping themselves. They had no votes for Parliament, and they had no trade unions, which Pitt's Combination Act of 1799 had declared to be illegal. Worst of all was the growth of slums. In the new industrial towns "speculative builders" (i.e. persons who wanted to make money by building and hiring out houses) were allowed to run up rows of shabby cottages back to back without

enough light or air, without drains or water supply, without gardens or playgrounds; and here a generation of slum children grew up to a life of poverty and ill-health, untouched by any church or school. In the slums was bred the spirit of the *class war*, a growing hatred of the rich who allowed these things to be.

—Adapted

THE ADVANCE OF DEMOCRACY

February 10, 1933.

In my last letter I tried to give you a glimpse of the progress of science in the nineteenth century. Let us now look at another aspect of this century—the growth of the democratic idea.

You will remember my telling you of the war of ideas in eighteenth-century France; of Voltaire, the greatest thinker and writer of his day, and of others in France, who challenged many old notions of religion and society and boldly advanced new theories. Such political thinking was largely confined to France at the time. In Germany there were the philosophers who interested themselves in more abstruse questions of philosophy. In England, business and trade were increasing and most people were not fond of thinking unless circumstances made them do so. One notable book, however, came out in England in the second half of the eighteenth century. This was Adam Smith's *Wealth of Nations*. It was not a book on politics as such, but on political economy or economics. This subject, like all other subjects at this time, was mixed up with religion and ethics, and there was thus a great deal

of confusion about it. Adam Smith dealt with it in a scientific way and, disregarding all ethical complications, tried to find natural laws which governed economics. Economics, as you perhaps know, deals with the management of the income and expenditure of the people or a country as a whole, of what they produce and what they consume, and their relations with each other and other countries and peoples. Adam Smith believed that all these rather complicated operations took place according to fixed natural laws, which he set down in his book. He also believed that full liberty should be given for the development of industry so that these laws might not be interfered with. This was the beginning of the doctrine of non-interference about which I have already told you something. Adam Smith's book had nothing to do with the new democratic ideas which were germinating in France at the time. But his attempt at scientific treatment of one of the most important problems which affected men and nations shows that men were going in a new direction, away from the old theological way of looking at everything. Adam Smith is considered the father of the science of economics, and he inspired many English economists of the nineteenth century.

The new science of economics was confined

to professors and a few well-read men. But meanwhile the new ideas of democracy were spreading and the American and French Revolutions gave them tremendous popularity and advertisement. The fine-sounding words and phrases of the American Declaration of Independence and the French Declaration of Rights stirred people to the depths. To the millions who were oppressed and exploited they brought a thrill and a message of deliverance. Both the declarations spoke of liberty and equality and of the right to happiness which every one has. The proud declaration of these precious rights did not result in the people obtaining them. But even the declaration of these principles was extraordinary and life-giving.

The old idea in Europe as elsewhere, in Christianity as in other religions, was that sin and unhappiness were the common and inevitable lot of man. Religion seemed to give a permanent and even an honoured place to poverty and misery in this world. The promises and rewards of religion were all for some other world; here we were told to bear our lot with resignation and not to seek any fundamental change. Charity was encouraged, the giving of crumbs to the poor, but there was no idea of doing away with poverty, or with a system which resulted in poverty. The

very ideas of liberty and equality were opposed to the authoritarian outlook of the Church and society.

Democracy did not, of course, say that all men were in fact equal. It could not say this, because it is obvious enough that there are inequalities between different men: physical inequalities which result in some being stronger than others, mental inequalities which are seen in some people being abler or wiser than others, and moral inequalities which make some unselfish and others not so. It is quite possible that many of these inequalities are due to different kinds of upbringing and education or want of education. Of two boys or girls who are similar in ability, give one a good education and the other no education, and after some years there will be a vast difference between the two. Or give one of them healthy food and the other bad and insufficient food, and the former will grow properly, while the latter will be weak and ailing and under-developed. So one's upbringing and surroundings and training and education make a vast deal of difference, and it may be that if we could give the same training and opportunities to everybody, there would be far less inequality than there is now. This is indeed very likely. But so far as democracy is concerned, it admitted that men were as a

matter of fact unequal, and yet it stated that each one of them should be treated as having an equal political and social value. If we accept this democratic theory in its entirety, we are led to all manner of revolutionary conclusions. We need not go into these at this stage, but one obvious consequence of the theory was that each person should have a vote for the election of a representative to the governing assembly or parliament. The vote was the symbol of political power, and it was assumed that if every one had a vote each such person would have an equal share in political power. Therefore one of the principal demands of democracy, right through the nineteenth century, was the extension of the franchise—that is, the right to vote. Adult suffrage or franchise meant that every adult or grown-up person should have the vote. For a long time women were not allowed to vote, and there was not very long ago a tremendous agitation by them, especially in Britain. In most advanced countries now there is adult suffrage for both men and women.

But, curiously enough, when most people had got the vote they found that it did not make very much difference to them. In spite of having the vote, they had no power, or very little power, in the State. A vote is of little use to a hungry

man. The people with real power were those who could take advantage of his hunger and make him work to do anything else that they wanted to their own advantage. Thus political power, which the vote was supposed to give, was seen to be a shadow with no substance, without economic power, and the brave dreams of the early democrats, that equality would follow from the vote, came to nothing.

This was, however, a much later development. In the early days — the end of the eighteenth and the beginning of the nineteenth century —there was great enthusiasm among the democrats. Democracy was going to make everybody a free and equal citizen and the government of the States would work for the happiness of everybody. There was a great reaction against the autocracy of kings and governments of the eighteenth century and the way they had abused their absolute power. This led people to proclaim the rights of individuals in their declarations. Probably these statements of the rights of individuals in the American and French declarations erred somewhat on the other side. In a complex society it is not an easy matter to separate individuals and give them perfect freedom. The interests of such an individual and of society may and do clash. However this

may be, democracy stood for a great deal of individual freedom.

England, which was backward in political ideas in the eighteenth century, was greatly affected by the American and French Revolutions. The first reaction was one of fear against the new democratic ideas and the possibility of a social revolution at home. The ruling classes became even more conservative and reactionary. But still the new ideas spread among the intellectuals. Thomas Paine was an interesting Englishman of this period. He was in America at the time of the War of Independence and helped the Americans. He seems to have been partly responsible for converting the Americans to the idea of complete independence. On his return to England he wrote a book, *The Rights of Man*, in defence of the French Revolution which had just begun. In this book he attacked monarchy and pleaded for democracy. The British Government outlawed him because of this, and he had to fly to France. In Paris he soon became a member of the National Convention, but in 1793 he was put in prison by the Jacobins because he had opposed the execution of Louis XVI. In the Paris gaol he wrote another book called *The Age of Reason*, in which he criticized the religious outlook. Paine being

out of reach of the English courts, his English publisher was sentenced to imprisonment for issuing this book. Such a book was considered dangerous to society, as religion was supposed to be necessary to keep the poor in their place. Several publishers of Paine's book, including women, were sent to prison. It is interesting to find that Shelley, the poet, wrote a letter of protest to the judge.

In Europe the French Revolution was the parent of the democratic ideas that spread throughout the first half of the nineteenth century. Indeed, the very ideas of the Revolution persisted, although conditions were rapidly changing. These democratic ideas were the intellectual reaction against kings and autocracy. They were based on conditions prior to industrialization. But the new industry—steam and big machinery—were completely upsetting the old order. Yet, strange to say, the radicals and democrats of the early nineteenth century ignored these changes and went on talking in the fine phrases of the Revolution and the Declaration of the Rights of Man. To them perhaps these changes were purely material and did not affect the high spiritual and moral and political demands of democracy. But material things have a way of refusing to be

ignored. It is very interesting to find how extraordinarily difficult it is for people to give up old ideas and accept new ones. They will shut their eyes and their minds and refuse to see; they will fight to hold on to the old even when it harms them. They will do almost anything but accept the new ideas and adapt themselves to new conditions. The power of conservatism is prodigious. Even the radicals, who imagine themselves very advanced, often stick to old and exploded ideas, and shut their eyes to changing conditions. It is no wonder that progress is slow, and often there is a great lag between actual conditions and people's ideas—resulting in revolutionary situations.

Democracy was thus for many decades the carrying on of the traditions and ideas of the French Revolution. This failure to adapt itself to the new conditions led to the weakening of democracy towards the end of the century, and later, in the twentieth century, to its repudiation by many people.

The early democrats naturally took to rationalism. Their demand for freedom of thought and speech could hardly be reconciled with dogmatic religion and theology. Thus democracy joined with science to weaken the hold of theological dogmas. People began to

dare to examine the Bible, as if it was an ordinary book and not something that must be accepted blindly and without questioning. This criticism of the Bible was called the "higher criticism". The critics came to the conclusion that the Bible was a collection of documents written by different persons in different ages. They also were of the opinion that Jesus had no intention of founding a religion. Many of the old beliefs were shaken by this criticism.

As the old religious foundations were being weakened by science and democratic ideas, attempts were made to formulate a philosophy to take the place of the old religion. One of these attempts was by a French philosopher, Auguste Comte, who lived from 1798 to 1857. Comte felt that the old theology and dogmatic religions were out of date, but he was convinced that some kind of religion was a social necessity. He therefore proposed a "religion of humanity" and called it "Positivism.' This was to be based on love, order and progress. There was nothing supernatural about it; it was based on science. At its back, as indeed at the back of nearly all current ideas of the nineteenth century, was the idea of the progress of the human race. Comte's religion remained the belief of a few intellectuals

only, but his general influence on European thought was great. He may be said to begin the study of the science of sociology, which deals with human society and culture.

A contemporary of Comte's, but surviving him by many years, was the English philosopher and economist, John Stuart Mill (1806-1873). Mill was influenced by Comte's teaching as well as by his socialistic ideas. He tried to give a new direction to the English school of political economy, which had grown up round the teachings of Adam Smith, and brought some socialistic principles into economic thought. But he is best known as the chief "utilitarian". "Utilitarianism" was a new theory, started a little earlier in England, and brought into greater prominence by Mill. As its name suggests, its guiding philosophy was utility or usefulness. "The greatest happiness of the greatest number" was the fundamental principle of the Utilitarians. This was the only test of right and wrong. Actions were said to be right in proportion as they tended to promote happiness, and wrong in so far as they tended to promote the reverse of happiness. Society and government were to be organized with this point of view—the promotion of the greatest happiness of the greatest number. This view-point was not quite the same as the

earlier democratic doctrine of equal rights for everybody. The greatest happiness of the greatest number might conceivably require the sacrifice or the unhappiness of a smaller number. I am merely pointing this difference out to you, but we need not discuss it here. Democracy thus came to mean the rights of the majority.

John Stuart Mill was a strong advocate of the democratic idea of liberty for the individual. He wrote a little book, *On Liberty*, which became famous.

I have given you just a few names of important thinkers in western Europe during the nineteenth century to show the way ideas were developing and to serve as landmarks in the world of thought. But the influence of these people, and the early democrats generally, was more or less confined to the intellectual classes. To some extent it percolated through the intellectuals to the others. Although the direct influence on the masses was slight, the indirect influence of this democratic ideology was great. Even the direct influence in some matters, such as the demand for the vote, was great.

As the nineteenth century grew older other movements and ideas developed—the working-class movement and socialism. These had their

influence on current democratic notions and were themselves affected by them. Some people looked upon socialism as an alternative to democracy; others considered it as a necessary part of it. We have seen that the democrats were full of notions of liberty and equality and every man's equal right to happiness. But they realized soon that happiness did not come by merely making it a fundamental right. Apart from other things, a certain measure of physical well-being was necessary. A person, who was starving was not likely to be happy. This led them to think that happiness depended on a better distribution of wealth among the people.

In the first half of the nineteenth century democracy and nationalism joined hands wherever subject nations or peoples were fighting for freedom. Mazzini of Italy was typical of this kind of democratic patriotism. Later in the century nationalism gradually lost this democratic character and became more aggressive and authoritarian. The State became the God which had to be worshipped by every one.

English business men were the leaders of the new industry. They were not much interested in high democratic principles and the people's right to liberty. But they discovered that

greater liberty for the people was good for business. It raised the standard of the workers, and gave them an illusion of possessing some freedom, and made them more efficient at their work. Popular education was also required for industrial efficiency. Business men and industrialists, appreciating the expediency of this, piously agreed to confer these favours on the people. In the second half of the century education of a kind spread rapidly among the masses in England and western Europe.

—Adapted

THE WONDERS OF MODERN SCIENCE

The Care of the Sick

As civilization advanced more attention began to be paid to the suffering and the diseased. Before the middle of the seventeeth century Dr. Harvey discovered how the blood circulates in the human body. In 1798 Dr. Jenner introduced vaccination as a means of preventing the scourge of smallpox, which had proved fatal to thousands, and had disfigured its numerous survivors. Two years later Sir Humphrey Davy discovered that pain could be relieved in minor operations by the use of nitrous-oxide gas—for example, in the extraction of teeth.

Thanks to the efforts of Dr. Simpson (1847) and others, the use of chloroform to deaden pain during major operations came into general use. But although the operations were successful and painless many of the patients failed to make a satisfactory recovery. Highly skilled surgeons began to distrust their own work; and the dread of operations again seized upon the public, as had been the case before the use of chloroform. A few years later, however, the cause of the trouble was discovered.

Louis Pasteur, a renowned French scientist, proved (1860) that diseases are caused by living germs, or microbes, so tiny that they can only be seen with the aid of a powerful microscope. He discovered that microbes are present in the air, and that they multiply most rapidly wherever the slightest speck of dust is present.

To Lord Lister (1827-1912) belongs the honour of showing how the growth of microbes in wounds can be prevented by the use of antiseptic lotions or ointments. Thus the amputation of infected limbs, formerly so common, became a much rarer occurrence.

Another discovery of the utmost importance to surgical science was made (1896) by Professor Rontgen of Wurzburg. His experiments revealed the fact that the skeleton of a living being can be photographed. As he knew little about the newly discovered rays he called them X-rays. By means of these wonderful rays the position of a bullet, or other opaque substance, embedded in the body or limb can be located. Rontgen rays, as they are now called, have proved of immense assistance to surgeons, especially in the treatment of the wounded during the Great War. X-ray treatment is also of service in the curing of certain diseases.

The Conquest of Space

Little more than a century ago the railway, the steamship, the electric-tram, the telegraph, the telephone, the motor-car, the aeroplane, and the broadcasting of messages by wireless were unknown. A journey from London to Edinburgh then took about eight days. This distance can now be covered by express train in a few hours, and a wireless message can be sent round the world in less than thirty seconds. To whom are we indebted for these wonderful improvements in the means of transport and communication ?

The railway and the steamship had already come into vogue. But another source of energy was soon to be into the service of man. Although the existence of electricity had long been known, its wonderful power had not been brought under control. Oersted (1777-1851), a Danish chemist, and Faraday (1791-1867), an English scientist, were among the pioneers who sought to harness the power of electricity.

In 1837 the electric telegraph was introduced; and in 1851 the first submarine cable was laid between Dover and Calais. Then, about 1877, came the telephone, mainly the result of Edison's labours, an American inventor—'the Wizard of the West'. Towards the end of the

nineteenth century the motor-car came into use. Daimler (1834-90), a German engineer, was the pioneer of the petrol-driven engine which was made to drive motor-cars and, later, aeroplanes.

For centuries men had dreamed of the possibility of flying through the air; but the first practical attempt to master the air was not made until the eighteenth century. The early aviators used the balloon which, however, was at the mercy of the wind. In 1905 two Americans, the brothers Wright, succeeded in flying twenty-four miles in their motor-driven aeroplane. Four years later the flight of the Frenchman, Louis Bleriot, from Calais to Dover was regarded as a wonderful feat. Since the first World War aviation has developed rapidly, and now a large part of the globe is covered by a net-work of air routes.

Marconi, a young Italian, first made wireless telegraphy a practical means of communication. In 1902 he succeeded in sending a wireless signal across the Atlantic. The first attempts at broadcasting, which is a combination of the telephone and wireless telegraphy, were made in 1920.

Radio and Television

Before 1939 the broadcasting of visual material was already taking place, and after the

close of World War Two 'looking in' began to compete in popularity with 'listening in' within a radius of from thirty to fifty miles of the biggest cities of America and Western Europe. Rader, a technical device with many applications in war, has also become a valuable aid in sea and air navigation.

Einstein

The great mathematician and scientist Einstein, with his theory of Relativity, has upset many scientific notions which seemed firmly established, and though his ideas are too difficult to be understood by the majority of people they have, none the less, led to important changes in the thinking of many who are neither scientists nor mathematicians. Amongst other things, Einstein has said that time and space cannot be regarded as separate entities, and that mass and energy are really the same thing in different forms.

Biologists Probe the Mystery of life

Perhaps most important of all are the discoveries which are now being made in physics and biology. Biologists have long since passed the stage of merely listing the differences between dead matter and living organisms, and, with their chemical analysis of what they call

'nucleoproteins', may be on the threshold of the secret of life itself. Few questions are of greater interest than that of how life came to this world of ours, a question which, until very recent times, seemed unlikely ever to be solved.

Atomic Energy

The great discovery of the physicists is that of releasing atomic energy—of changing matter into energy. British and American scientists won the race of the nations at war for the solution of this problem, and, applying their knowledge, dramatically brought to an end in a few days the final stage of the war with Japan which had, until August 1945, seemed likely to be long drawn out and immensely costly in lives.

Though the new discovery has important industrial and medical applications, it is as a terrible weapon of mass destruction that it dominates the minds of men to-day, and the scientists who know most about it are rightly fearful of its consequences.

Quarrelling, even in a good cause, might lead to a situation in which one nation or another would resort to atomic warfare on a big scale, with the possible consequence that the march of

civilization could end in a fiery furnace, leaving the earth a burnt-out, lifeless cinder.

—Adapted

THE PRESENT POINT IN HISTORY

Where does mankind stand in the year 1947 of the Christian era? This question no doubt concerns the whole living generation throughout the world; but, if it were made the subject of a world-wide voting there would be no unanimity in the answer. So we must ask ourselves in the same breath: To whom is our question being addressed? For example, the writer of the present paper is a middle-class Englishman of fifty-eight. Evidently his nationality, his social background and his age, between them, will in large measure determine the standpoint from which he views the world scene. In fact, like each and all of us, he is more or less the slave of historical relativity. The only personal advantage that he can claim to possess is that he happens also to be a historian, and knows that his fleeting and fragmentary vision of the passing scene is no more than a caricature of the surveyor's chart. God alone knows the true picture.

The writer's mind runs back fifty years, to an afternoon in London in the year 1897. He is sitting with his father at a window in Fleet Street and watching a procession of Canadian and

Australian mounted troops who have come to celebrate Queen Victoria's Diamond Jubilee. He can still remember his excitement at the unfamiliar, picturesque uniforms of these magnificent 'colonial' troops, as they were still called in England then. To an English child, this sight gave a sense of new life astir in the world; a philosopher, perhaps, might have reflected that, where there is growth, there is likely also to be decay.

As the English saw it, history, for them, was over. It had come to an end in foreign affairs in 1815, with the Battle of Waterloo; in home affairs in 1832, with the Great Reform Bill; and in imperial affairs in 1859, with the suppression of the Indian Mutiny. And they had every reason to congratulate themselves on the permanent state of felicity which this ending of history had conferred on them.

Viewed from the historical vantage point of A.D. 1947, this middle-class English hallucination seems sheer lunacy, yet it was shared by contemporary Western middle-class people of other nationalities. In the United States, for instance, in the North, history, for the middle class, had come to an end with the winning of the West and the Federal victory in the Civil War; and in Germany, or at any rate in Prussia,

for the same class, the same permanent consummation had been reached with the overthrow of France and foundation of the Second Reich in 1871. For these three batches of Western middle-class people fifty years ago, God's work of creation was completed, 'and behold it was very good'. Yet, though in 1897 the English, American, and German middle class, between them, were the political and economic masters of the world, they did not amount, in numbers, to more than a very small fraction of the living generation of mankind, and there were other people abroad who saw things differently—even though they might be powerless.

In the South, for example, and in France, there were in 1897 many people who agreed with their late conquerors that history had come to an end. The Confederacy would never rise from the dead; Alsace-Lorraine would never be recovered. This sense of finality, which was so gratifying to top dog, did not warm a defeated people's heart. For them it was nothing but a nightmare. English liberals at the time were indeed talking freely, and with approval, of a coming liberation of subject nationalities in Austria-Hungary and the Balkans. But, in spite of the spectre of Home Rule and the stirrings of 'Indian unrest', it did not occur to them that, in

South-Eastern Europe, they were greeting the first symptoms of a process of political liquidation which was to spread, in their lifetime, to both India and Ireland and, in its irresistible progress round the world, was to break up other empires besides the Hapsburg Monarchy.

All over the world, in fact, though at that time still under the surface, there were peoples and classes who were just as discontented as the French or the Southerners were with the latest deal of history's cards, but who were quite unwilling to agree that game was over. There were all the subject peoples and all the depressed classes, and what millions they amounted to ! They included the whole vast population of the Russian Empire of the day, from Warsaw to Vladivostok: Poles and Finns determined to win their national independence; Russian peasants determined to gain possession of the rest of the land of which they had been given so meagre a slice in the reforms of the eighteen-sixties; Russian intellectuals and business men who dreamed of one day governing their own country through parliamentary institutions, as people of their kind had long been governing the United States, Great Britain, and France; and a young and still small Russian industrial working class that was being turned revolutionary-minded by living

conditions that were grim enough, though perhaps less so than those of early nineteenth-century Manchester. The industrial working class in England had, of course, improved their position very notably since the opening of the nineteenth century, thanks to the factory acts, the trades unions, and the vote (they had been enfranchised by Disraeli in 1867). Still, in 1897, they could not, and did not, look back on the Poor Law Act of 1834, as the middle class did look back on the Reform Bill of 1832, as history's last word in wisdom. They were not revolutionary, but, on constitutional lines, they were resolved to make the wheels of history move on.

The deep desire for changes and the strong resolve to bring them about by one means or another were not, after all, surprising in the underdog, as represented by underprivileged classes and defeated or unliberated peoples.

To-day, in 1947, the Western middle class which, fifty years ago, was sitting carefree on the volcano's crust, is suffering something like the trial which, a hundred to a hundred and fifty years ago, was inflicted by Juggernaut's car on the English industrial working class. The future of the Western middle class is in question now in all Western countries; but the outcome is not simply the concern of the small fraction of

mankind directly affected; for this Western middle class—this tiny minority– is the leaven that in recent times has leavened the lump and has thereby created the modern world. Could the creature survive its creator? If the Western middle class broke down, would it bring humanity's house down with it in its fall? Whatever the answer to this fateful question may be, it is clear that what is a crisis for this key-minority is inevitably also a crisis for the rest of the world.

In the divided world of 1947, Communism and Capitalism are blaming each other for the ills of the world. Whenever things go wrong in circumstances that seem ever more beyond control, we tend to accuse the enemy of having sown tares in our field and thereby implicitly excuse ourselves for the faults in our own husbandry.

The present Western fear of Communism is not a fear of military aggression such as we felt in face of a Nazi Germany and a militant Japan. The United States at any rate, with her overwhelming superiority in industrial potential and her monopoly of the 'know-how' of the atom bomb, is at present secure against military attack by the Soviet Union. For Moscow, it would be sheer suicide to make the attempt, and there is no evidence that the Kremlin has any intention

of committing such a folly. The Communist weapon that is making America so jumpy (and, oddly enough, she is reacting more temperamentally to this threat than the less sheltered countries of Western Europe) is the spiritual engine of propaganda. Communist propaganda has a 'know-how' of its own for showing up and magnifying the seamy side of our Western civilization and for making Communism appear a desirable alternative way of life to a dissatisfied faction of Western men and women. Communism is also a competitor for the allegiance of that great majority of mankind that is neither Communist nor Capitalist, neither Russian nor Western, but is living at present in an uneasy no-man's-land between the opposing citadels of the two rival ideologies. Both non-descripts and Westerners are in danger of turning Communist to-day, and, though Communists are in similar danger of turning Capitalist—as sensational instances have shown—the fact that one's rival witch-doctor is as much afraid of one's own medicine as one is afraid, oneself, of his, does not do anything to relieve the tension of the situation.

Yet the fact that our adversary threatens us by showing up our defects, rather than by forcibly suppressing our virtues, is proof that the challenge he presents to us comes ultimately not

from him, but from ourselves. It comes, in fact, from that recent huge increase in Western man's technological command over non-human nature —his stupendous progress in 'know-how'—which was just what gave our fathers the confidence to delude themselves into imagining that, for them, history was comfortably over. Through these triumphs of clockwork the Western middle class has produced three undesigned results—unknown in history—whose cumulative impetus has set Juggernaut's car rolling on again with a vengeance. Our Western 'know-how' has unified the whole world in the literal sense of the whole habitable and traversable surface of the globe; and it has inflamed the institutions of War and Class, which are the two congenital diseases of civilization, into utterly fatal maladies. These three unintentional achievements present us with a challenge that is formidable indeed.

War and Class have been with us ever since the first civilizations emerged above the level of primitive human life some five or six thousand years ago, and they have always been serious complaints. Of the twenty or so civilizations known to modern Western historian, all except our own appear to be dead and, when we diagnose each case, we invariably find that the cause of death has been either War or Class or

some combination of the two. To date, these two plagues have been deadly enough, in partnership, to kill off nineteen out of twenty representatives of this recently evolved species of human society; but, up to now, the deadliness of these plagues has had a saving limit. While they have been able to destroy individual specimens, they have failed to destroy the species itself. Civilizations have come and gone, but Civilization (with a big 'C') has succeeded, each time, in re-incarnating itself in fresh exemplars of the type; for, immense though the social ravages of War and Class have been, they have not ever yet been all-embracing. When they have shattered the top layers of a society, they have usually failed to prevent the underlying layers from surviving, more or less intact, and clothing themselves with spring flowers on exposure to the light and air. And when one society has collapsed in one quarter of the world it has not, in the past, necessarily dragged down others with it. When the early civilization of China broke down in the seventh century B.C., this did not prevent the contemporary Greek civilization, at the other end of the Old World, from continuing to rise towards its zenith. And when the Graeco-Roman civilization finally died of the twin diseases of War and Class in the course

of the fifth, sixth, and seventh centuries of the Christian era, this did not prevent a new civilization from successfully coming to birth in the Far East during those same three hundred years.

Why cannot civilization go on shambling along, from failure to failure, in the painful, degrading; but not utterly suicidal way in which it has kept going for the first few thousand years of its existence? The answer lies in the recent technological inventions of the modern Western middle class. These gadgets for harnessing the physical forces of non-human nature have left human nature unchanged. The institutions of War and Class are social reflections of the seamy side of human nature—or what the theologians call original sin—in the kind of society that we call civilization. These social effects of individual human sinfulness have not been abolished by the recent advance in our technological 'know-how' but they have not been left unaffected by it either. Not having been abolished, they have been enormously keyed up, like the rest of human life, in respect of their physical potency. Class has now become capable of irrevocably disintegrating Society, and War of annihilating the entire human race. Evils which hitherto have been merely disgraceful and grievous have now become intolerable and deadly, and, therefore,

we in this Westernized world in our generation are confronted with a choice of alternatives which the ruling elements in other societies in the past have always been able to shirk—with dire consequences, invariably, for themselves, but not at the extreme price of bringing to an end the history of mankind on this planet. We are thus confronted with a challenge that our predecessors never had to face: We have to abolish War and Class—and abolish them now—under pain, of seeing them win a victory over man which, this time, would be conclusive and definitive.

The new aspect of war is already familiar to Western minds. We are aware that the atom bomb and our many other new deadly weapons are capable, in another war, of wiping out not merely the fighters but the whole of the human race. But how has the evil of class been heightened by technology? Has not technology already notably raised the minimum standard of living—at any rate in countries that have been specially efficient or specially fortunate in being endowed with the riches of nature and being spared the ravages of war? Can we not look forward to seeing this rapidly rising minimum standard raised to so high a level, and enjoyed by so large a percentage of the human race, that the even greater riches of a still more highly

favoured minority will cease to be a cause of heart-burning? The defect in this line of reasoning is that it leaves out of account the vital truth that man does not live by bread alone. However high the minimum standard of his material living may be raised, that will not cure his soul of demanding social justice; and the unequal distribution of this world's goods between a privileged minority and an underprivileged majority has been transformed from an unavoidable evil into an intolerable injustice by the latest technological inventions of Western man.

When we admire aesthetically the marvellous masonry and architecture of the Great Pyramid, there is a conflict in our hearts between our pride and pleasure in such triumphs of human art and our moral condemnation of the human price at which these triumphs have been bought: the hard labour unjustly imposed on the many to produce the fine flowers of civilization for the exclusive enjoyment of a few who reap where they have not sown. During these last five or six thousand years, the masters of the civilizations have robbed their slaves of their share in the fruits of society's corporate labours as cold-bloodedly as we rob our bees of their honey. The moral ugliness of the unjust act mars the aesthetic beauty of the artistic result: yet, up till now, the few

favoured beneficiaries of civilization have had one obvious common-sense plea to put forward in their own defence.

It has been a choice, they have been able to plead, between fruits of civilization for the few and no fruits at all. Our technological command over nature is severely limited. We have at our command neither sufficient muscle-power nor sufficient labour to turn out our amenities in more than minute quantities. If I am to deny these to myself just because you cannot all have them too, we shall have to shut up shop and allow one of the finest talents of human nature to rust away buried in a napkin; and, while that is certainly not in my interest, it is surely not in yours either on a longer view. For I am not enjoying this monopoly of amenities exclusively for my own benefit. In indulging myself at your expense, I am in some sense serving as a kind of trustee for all future generations of the whole human race. This plea was a plausible one, even in our technologically go-ahead Western world, down to the eighteenth century inclusive, but our technological progress in the last hundred and fifty years has made the same plea invalid to-day. In 1947 the always ugly inequality in the distribution of this world's goods, in ceasing to be a practical necessity, has become a moral enormity.

Thus the problems that have baffled other civilizations have come to a head in our world to-day. We have invented the atomic weapon in a world partitioned between two supremely great powers; and the United States and the Soviet Union stand respectively for two opposing ideologies. Along what path are we to look for salvation in this plight, in which we hold in our hands the choice of life or death not only for ourselves but for the whole human race ? Salvation perhaps lies, as so often, in finding a middle way. In politics, the golden mean would be something that was neither the unrestricted sovereignty of nation-states nor the unrelieved despotism of a centralized world government; in economics it would be something that was neither unrestricted private enterprise nor unmitigated socialism. As one middle-aged middle-class West European observer sees the world to-day, salvation cometh neither from the East nor from the West.

In A. D. 1947, the United States and the Soviet Union are alternative embodiment of contemporary man's tremendous material power; 'their line is gone out through all the Earth, and their words to the end of the World,' but in the mouths of these loud-speakers one does not hear the still small voice. Our cue may

still be given us by the message of Christianity and the other higher religions, and the saving words and deeds may come from unexpected quarters.

—Adapted

NOTES

OUR EARLIEST ANCESTORS

This lesson has been selected from 'The Story of Mankind'. In this, Hendrik William Van Loon, the author, tells us how the stage was first set for the appearance of man and how the prehistoric man lived and gradually made things for himself.

hibernal : belonging or relating to winter.

THE FIRST CIVILIZATION IN OLD WORLD

In this lesson, Patrick Gordon Walker gives a very interesting summary of the earliest civilizations of the world, viz., the civilizations of Egypt, Mesopotamia, The Indus Valley, The Hwangho Valley and Minos.

Pharaoh : Name of ancient Egyptian Kings.
desiccation : drying up.
malachite : carbonate of copper, green in colour.

THE GLORY THAT WAS GREECE

The present piece is an extract from C. E. M. Joad's book, 'The Story of Civilization'. Professor Joad was the Head of the Department of Philosophy and Psychology at Birbeck College, London. He is noted for his clear, forceful style and originality. For some time he was also a member of the B. B. C. 'Brains Trust' and his persuasive broadcast talks made him a favourite speaker with countless listeners. Professor Joad has written extensively

and his numerous books include 'A Guide to Philosophy', 'Philosophy for Our Times','A Guide to Modern Thought', 'The Testament of Joad,' 'The Story of Civilization', and 'Modern Political Theory'. In the present piece he gives his readers a glimpse of the glory that was Greece.

Acropolis : the sacred hill of Athens, about 1000 feet in length and 500 feet in breadth. It rises to a height of about 180 feet above the plains. Some of the most beautiful temples and other buildings of ancient Athens were erected on the Acropolis.

Hippocrates : The most celebrated physician of antiquity, can be compared with our Dhanvantari, the founder of Ayurveda. Many people think that Hippocrates and his sayings are just a legend.

Herodotus : He is known as the Father of History. His work is entitled 'Histories' and divided into nine books.

Thucydides : The greatest historian of antiquity. Wrote the history of the Peloponnesian War.

Euclid : (Eucleides), the celebrated geometrician. He lived at Alexandria.

Socrates : The first great philosopher of Greece His teachings are preserved in Plato's 'Dialogues'.

Plato : A pupil and devoted admirer of Socrates.

Aristotle : Studied under Plato; was appointed tutor to Alexander. His most famous works are 'Poetics', 'Ethics', and 'Politics'.

Democracy : defined by Abraham Lincoln as 'the Government of the people, for the people and by the people'. The word is of Greek origin (*Demos*=people, and *cracy*=government).

Aeschylus : may be regarded as the founder of the Greek Tragedy. Of his tragedies, only seven have survived.

Sophocles : the greatest of the Greek tragic poets. Among his famous plays is 'Antigone'. Matthew Arnold says of Sophocles that he 'saw life steadily and saw it whole'.

Euripides : the most modern-minded of the Greek tragedians. .His plays are noted for their humanism and realism.

Shaw : George Bernard (1856-1950). After Shakespeare, the greatest English dramatist.

Aristophanes : the Athenian comic poet. His comedies are of great historical value because of their caricatures of the leading personalities of the time and their comments on current affairs.

THE LIFE AND GOSPEL OF THE BUDDHA

H. G. Wells studied science but later took to literature. He has written mostly stories and novels, but has also written on socialism, war and history. The present extract is taken from his famous book, 'The Outline of History'.

ante-room : room leading to another.

"Whosoever would save his life, shall lose it" : this was said by Christ.

CHRIST AND HIS GOSPEL

This chapter has been selected from the 'Story of Civilization' by Will Durant, the great American thinker. In this he gives an interesting account of the life and gospel of Jesus the Christ.

Galilee : the most northerly of the three provinces into which Palestine, west of the Jordan, was divided in the time of Christ.

Essene : member of an ancient Jewish sect remarkable for its strictness and abstinence.

Pharisees : a sect among the Jews distinguished by their strict observance of rites and ceremonies.

Rabbi : expounder of law among the Jews.

Son of Man : Christ the Messiah.

gentile : a person not belonging to the Jewish nation.

Samaritan : native or inhabitant of Samaria, a city of the ten tribes of Israel, (also a charitable person).

Passover : Jewish feast commemorating the passing over of Israelites' houses when Egyptians were smitten.

Pontius Pilate : fifth Roman procurator of Judea and Samaria in whose time Jesus suffered.

centurion: Commander of Century in Roman army.

Mary Magdalene : a prostitute reformed by Christ.

ARABIC AND OTHER MOSLEM CIVILIZATIONS

This extract is taken from 'A History of World Civilization' by Dr. James Edgar Swain. He is Professor of History, and Chairman of the Social Science Department, Muhlenberg College, U. S. A. In this he gives a very interesting account of the life of Mohammed and the Moslem civilization.

Semitic : Hebrews, Armeneans, Phoenicians, Arabs and Assyrians are known as Semitic races.

Byzantine : pertaining to Byzantium, at one time the capital of the Eastern Roman Empire.

Caliph : Successor of Mohammed, chief Mohammedan civil and religious ruler.

Ottoman : of the dynasty of Othman I, a branch of the Turks.

THE RENAISSANCE

This lesson has been selected from 'World History' by J. C. Revill of St. Luke's College, Exeter. In this he gives a very vivid account of the various movements in art, literature and science that influenced the thought and life of men in 14th to 16th centuries.

Renaissance : Revival of art, literature, etc., under the influence of classical models in 14th to 16th centuries.

scholastic : pertaining to the schools, academic, formal.

Florentine : pertaining to Florence in Tuscany.

fresco: picture in water-colour laid on wall or ceiling before plaster is dry.

Sistine Chapel : place of worship in Vatican with frescos.

Madonna: picture or statue representing Virgin Mary.

woodcut : an engraving on wood or a print from such engraving.

inquisition : a court or tribunal established by the Roman Catholic Church for the examination and punishment of non-believers in its doctrines.

THE INDUSTRIAL REVOLUTION

This lesson has been selected from 'A History of England' by C. E. Carrington, some time lecturer in

History at Pembroke College, Oxford, and J. Hampden Jackson, Assistant Master at Haileybury College. They have given an interesting account of the Industrial Revolution and shown its importance in the civilization of mankind.

swedes : Swedish turnips.

mangold : a large kind of beet, used as cattle food.

"pigs" : mass of iron from smelting furnace.

THE ADVANCE OF DEMOCRACY

This chapter has been selected from 'Glimpses of Word History' by Jawaharlal Nehru. He wrote to his daughter a series of letters from prison and these have been published in the form of a book. In this letter, he shows how the idea of democracy has advanced and what shape it has taken at present.

Voltaire (1694-1778): a great French poet, dramatist, philosopher and historian.

Adam Smith (1723-1790) : a great English political economist. In 1776, he wrote the 'Wealth of Nations' which became very famous.

Thomas Paine : He was born in 1737 at Thetford. In 1774, he sailed for Philadelphia. He wrote a book, advising the Americans to become completely independent of England. In 1787, he returned to England where he published his famous book, 'The Rights of Man'. He went to France where he was imprisoned but released after eleven months. After this, he returned to America and died in New York in 1809.

Jacobins : violent republicans in France during the revolution of 1789.

Auguste Comte (1798-1857) : a French philosopher, famous for his philosophy of Positivism which teaches that the object of love and reverence is Humanity, a unity consisting of all men and women, and that the highest ideal is the well-being and progress of the human race.

John Stuart Mill (1806-1873): an English philosopher who was a great advocate of the philosophy of Utilitarianism which taught that the greatest happiness of the greatest number was the ideal of conduct.

Mazzini (1805-1872) : the great Italian patriot who fought for Italian independence.

THE WONDERS OF MODERN SCIENCE

This chapter has been selected from 'The March of Civilization' by George Guest, author of a number of books on History. In this lesson, he gives a brief but interesting account of all the important inventions of science which have contributed to the civilization and culture of modern man.

submarine cable : cable existing at some depth in the waters of the sea.

television : seeing, by a scientific process, of what is existing or happening at a place veiled by obstacles or distance from the observer's eyes.

THE PRESENT POINT IN HISTORY

This has been selected from 'Civilization on Trial' by Toynbee, the famous historian. In this essay, he shows that we have reached a critical point in civilization which

can be saved from ruin only if mankind takes greater interest in spirituality.

Hapsburg Monarchy : the imperial family of Austria whose ancestors held the castle of Hapsburg. The family increased its possessions and power so that in 1273, Count Rodolph was elected Emperor of Germany.

Kremlin: The Russian Power.

Juggernaut's car : this has been borrowed from Jagannath's car annually dragged in procession at Puri. Figuratively, it is used for anything that is heavy and crushing.